

**Autonomy and Relatedness in Mainland Chinese Adolescents: Social or Personal?
Accommodation or Distinctiveness?**

By

Junru Zhao

A thesis
submitted in partial fulfillment
of the requirements for the degree
Doctor of Philosophy

Department of Psychology
BROCK UNIVERSITY
St. Catharines, Ontario

June 2014

© Junru Zhao, 2014

Abstract

Three studies comprised the current research program, in which the major goals were to propose and validate empirically the proposed two-level (universal and culture-specific) model of both autonomy and relatedness, as well as to develop reliable and valid measures for these two constructs. In Study 1, 143 mainland Chinese adolescents were asked open-ended questions about their understanding of autonomy and relatedness in three social contexts (peer, family, school). Chinese youth's responses captured universal and culturally distinctive forms of autonomy (personal vs. social) and relatedness (accommodation vs. distinctiveness), according to a priori criteria based on the theoretical frameworks. Also, scenarios designed to reflect culture-specific forms of autonomy and relatedness suggested their relevance to Chinese adolescents. With a second sample of 201 mainland Chinese youth, in Study 2, the obtained autonomy and relatedness descriptors were formulated into scale items. Those items were subject to refinement analyses to examine their psychometric properties and centrality to Chinese youth. The findings of Study 1 scenarios were replicated in Study 2. The primary goal of Study 3 was to test empirically the proposed two-level (*universal* and *culture-specific*) models of both autonomy and relatedness, using the measures derived from Studies 1 and 2. A third sample of 465 mainland Chinese youth completed a questionnaire booklet consisting of autonomy and relatedness scales and scenarios and achievement motivation orientations measures. A series of confirmatory factor analysis (CFA) autonomy and relatedness measurement models (first-order and second-order), as well as structural models linking culture-specific forms of autonomy and relatedness and achievement motivation orientations, were conducted. The first-order measurement models based on scale and scenario scores consistently confirmed the distinction between personal autonomy and social autonomy, and that of accommodation and distinctiveness. Although the

construct validity of the two culture-specific forms of autonomy gained additional support from the structural models, the associations between the two culture-specific forms of relatedness and achievement motivation orientations were relatively weak. In general, the two-level models of autonomy and relatedness were supported in two ways: conceptual analysis of scale items and second-order measurement models. In addition, across the three studies, I explored potential contextual and sex differences in Chinese youth's endorsement of the diverse forms of autonomy and relatedness. Overall, no substantial contextual variability or sex differences were found. The current research makes an important theoretical contribution to the field of developmental psychology in general, and autonomy and relatedness in particular, by proposing and testing empirically both universal and culture-specific parts of autonomy and relatedness. The current findings have implications for the measurement of autonomy and relatedness across social contexts, as well as for socialization and education practice.

Acknowledgements

Life is a journey and so has been the pursuit of my PhD degree. At this moment, the fear, tears, and frustration I experienced over the past years, all seem to be far away. What is left? Gratitude.

From the bottom of my heart, I am grateful to my supervisor, Dr. Linda Rose-Krasnor. Throughout my master's and doctoral studies, Linda has consistently shown to me that she is a dedicated educator. Personally speaking, she has always been very patient in helping me develop my research ability as well as improving my English, which is my second language. Next, I greatly appreciate my thesis committee, Dr. Dorothy Markiewicz and Dr. Tanya Martini, who provided excellent comments on both my dissertation proposal and the initial findings of my research. In addition, their encouragement has helped make me feel that I could still go on.

To my dear friends Yanru Wu and Qingshun Xiao, the participating schools and youth, thank you so much for helping me get the data collection done so efficiently. I am also fortunate to have great friends, who helped with the translation and back-translation of materials used in this research program (Miao Li, Xia Zhang, and Xin Zheng) and made invaluable suggestions to this project (Tina Brook and Heather Ramey).

The encouragement, support, and warm climate in the psychology department at Brock University helped me survive and grow, both academically and psychologically. Just to name a few in appreciation, I would like to acknowledge Dr. Mike Ashton and Dr. Michael Busseri for their help with statistical analyses, and Dr. Teena Willoughby for her kindness and generosity with time spent on my research.

Finally, my deep thanks go to my family as they are the source of my strength and courage, forever.

Table of Contents

Abstract	ii
Acknowledgements.....	iv
List of Tables.....	vii
List of Figures.....	viii
List of Appendices.....	xi
Chapter 1: General Introduction.....	1
Overview.....	1
Revisiting Autonomy and Relatedness in a Cultural Context.....	2
Autonomy and Relatedness in Contemporary Mainland China.....	7
The Present Dissertation	8
References.....	10
Chapter 2: Study 1. Exploring Concepts of Autonomy and Relatedness in Mainland Chinese Adolescents.....	16
Method.....	18
Results.....	24
Discussion.....	37
References.....	42
Chapter 3: Study 2. Refinement of Autonomy and Relatedness Measures.....	46
Method.....	46
Results.....	48
Discussion.....	59
References.....	64

Chapter 4: Study 3. Testing the Two-Level (Universal vs. Culture-Specific) Models of	
Autonomy and Relatedness in Mainland Chinese Adolescents	65
Method.....	67
Results.....	69
Discussion.....	110
References.....	113
Chapter 5: General Discussion.....	116
The Two-Level Models of Autonomy and Relatedness.....	116
Measurement: Scales vs. Scenarios.....	118
Contextual Variations in Autonomy and Relatedness.....	122
Sex Differences in Autonomy and Relatedness.....	123
Strengths and Practical Implications.....	123
Limitations and Future Research Directions.....	125
Conclusions.....	126
References.....	127
Appendices.....	132

List of Tables

Table 1. Autonomy and relatedness descriptors and grouping	23
Table 2. Psychometric qualities of autonomy and relatedness scenario scores in Study 1.....	35
Table 3. First-order correlations among Study 1 scenario scores.....	36
Table 4. All retained and eliminated autonomy items in Study 2.....	50
Table 5. All retained and eliminated relatedness items in Study 2.....	52
Table 6. Psychometric qualities of the remaining autonomy items in Study 2.....	54
Table 7. Psychometric qualities of the remaining relatedness items in Study 2.....	57
Table 8. Psychometric qualities of autonomy and relatedness scenario scores in Study 2.....	60
Table 9. First-order correlations among Study 2 scenario scores.....	61
Table 10. Psychometric qualities of Study 3 measures.....	73
Table 11. First-order correlations among Study 3 scenario scores.....	75
Table 12. Correlations among autonomy scores in Study 3.....	88
Table 13. Correlations among relatedness scores in Study 3.....	100

List of Figures

Figure 1. Number of participants giving autonomy descriptors in “felt autonomous” situations.....	26
Figure 2. Number of participants giving autonomy descriptors in “did not feel autonomous situations.....	27
Figure 3. Number of participants giving relatedness descriptors in “felt close” (i.e. high relatedness) situations.....	30
Figure 4. Number of participants giving relatedness descriptors in “did not feel close” (i.e. low relatedness) situations.....	32
Figure 5. Hypothesized two-factor measurement model of autonomy based on scale scores.....	77
Figure 6. Estimated two-factor measurement model of autonomy based on scale scores.....	78
Figure 7. Hypothesized two-factor measurement model of autonomy based on scenario scores.....	80
Figure 8. Estimated two-factor measurement model of autonomy based on scenario scores.....	81
Figure 9. Hypothesized second-order measurement model of autonomy based on scale scores..	83
Figure 10. Estimated second-order measurement model of autonomy based on scale scores.....	84
Figure 11. Hypothesized second-order measurement model of autonomy based on scenario scores.....	86
Figure 12. Estimated second-order measurement model of autonomy based on scenario scores.....	87
Figure 13. Hypothesized two-factor measurement model of relatedness based on scale scores.....	90

Figure 14. Estimated two-factor measurement model of relatedness based on scale scores.....	91
Figure 15. Hypothesized two-factor measurement model of relatedness based on scenario scores.....	93
Figure 16. Estimated two-factor measurement model of relatedness based on scenario scores.....	94
Figure 17. Hypothesized second-order measurement model of relatedness based on scale scores.....	96
Figure 18. Estimated second-order measurement model of relatedness based on scale scores.....	97
Figure 19. Hypothesized second-order measurement model of relatedness based on Scenario scores.....	98
Figure 20. Estimated second-order measurement model of relatedness based on Scenario scores.....	99
Figure 21. Estimated measurement model of social-oriented achievement Motivation (SOAM).....	102
Figure 22. Estimated measurement model of individual-oriented achievement motivation (IOAM).....	103
Figure 23. Estimated structural model of autonomy (based on scale scores) and achievement motivation orientations.....	105
Figure 24. Estimated structural model of autonomy (based on scenario scores) and achievement motivation orientations.....	106
Figure 25. Estimated structural model of relatedness (based on scale scores) and achievement	

motivation orientations.....	108
Figure 26. Estimated structural model of relatedness (based on scenario scores) and achievement	
motivation orientations.....	109

List of Appendices

Appendix A: Ethics Clearance Form_1.....	132
Appendix B: Study 1 Questionnaire Booklet.....	133
Appendix C: Autonomy and Relatedness Descriptors Coding Manual.....	141
Appendix D: Ethics Clearance Form_2.....	147
Appendix E: Autonomy and Relatedness Scales in Study 2.....	148
Appendix F: Social-Oriented and Individual-Oriented Achievement Motivation Scale.....	152
Appendix G: Final Sets of Autonomy and Relatedness Items.....	154

Autonomy and Relatedness in Mainland Chinese Adolescents: Social or Personal?

Accommodation or Distinctiveness?

Chapter 1: General Introduction

Overview

In many theoretical frameworks, achieving *autonomy*, while maintaining *relatedness* to significant others, has been a fundamental developmental task. For example, according to Erikson (1950), there are eight major developmental stages, with a defining task or “crisis” at each stage. The central task of infancy is to establish a “trust” relationship with the primary caregiver, through which infants develop basic faith in themselves and the world in general. The establishment of trust is thought to be the foundation for the attainment of autonomy, the defining task of the second developmental stage, in which toddlers want to choose and decide for themselves. Autonomy, in turn, gives rise to healthy relationships.

In a similar vein, in Bowlby’s (1969/1982, 1973) and Ainsworth’s (1976) attachment theory, infants’ exploratory behavior is described as autonomy and attachment behavior as relatedness. These two kinds of behaviors are conceptualized as opposite to each other in the short term, but in the long term are complementary. In other words, when children get older, those who are autonomous are likely to develop close relationships with others, which, in turn, will facilitate children’s autonomy.

In their Self-Determination theory (SDT), Deci and Ryan (e.g., Deci & Ryan, 1985; Ryan & Deci, 2000) proposed that autonomy and relatedness are basic human needs found across cultures and that the more socialization agents support these needs, the greater individuals’ well-being. Although SDT emphasizes that both autonomy and relatedness can each make a unique contribution to individuals’ adaptive adjustment, individuals’ volitional and self-endorsed actions

and behaviors might well be compatible with building trusting and satisfying relationships with others (Kagitcibasi, 1996; Vansteenkiste, Lens, Soenens, & Luycks, 2006).

Further, the developmental significance of autonomy and relatedness has been particularly emphasized in adolescence (e.g., Blos, 1979; Grotevant & Cooper, 1985; Moore, 1987; Steinberg, 1990). Indeed, many of the normative developmental changes that take place during adolescence make this life-span period relevant for the study of both autonomy and relatedness. For instance, with cognitive maturity, adolescents solve problems and make decisions more effectively, which may support autonomy, while still needing guidance and/or support from others (Berk, 2003). Also, numerous researchers have documented connections among autonomy, relatedness, and healthy development in Western adolescents. Autonomy has been positively related to adolescent identity exploration (e.g., Grotevant & Cooper, 1985), self-esteem (Allen, Hauser, Bell, & O'Connor, 1994), and empathy (e.g., Deci & Ryan, 1987; Williams & Deci, 1996). Adolescent autonomy also has been found to operate within a satisfying relatedness context (Walker & Taylor, 1991).

However, a notable gap in the literature is that the relevance of Western conceptualization of autonomy and relatedness to other cultures is relatively unknown. To address this limitation, in the current research program, I proposed and tested empirically a two-level (universal vs. culture-specific) model of both autonomy and relatedness in Mainland Chinese adolescents.

Revisiting Autonomy and Relatedness in a Cultural Context

According to the “universality without uniformity” perspective, “what everyone has in common, what unifies and in a sense universalizes us is itself a heterogeneous complex of inherited psychological processes and forms” (Shweder & Sullivan, 1993, p.517). Indeed, in line

with this perspective, SDT theorists (e.g., Ryan & Deci, 2000) have acknowledged that although both autonomy and relatedness are basic human needs, the specific modes of expression and avenues for satisfying such needs can vary considerably by culture and context.

Both autonomy and relatedness may involve the concept of *self*. However, the meaning of *self* could vary from theory to theory. According to *self-construal theory* (Markus & Kitayama, 1991), the self concerns the extent to which individuals see themselves as *connected with* or *differentiated from* others. In other words, the self defines those *who* are included in one's self-systems. In this thesis, self-construal framework was taken into consideration in my conceptualizations of both autonomy and relatedness, as explained in detail below.

Autonomy: universal vs. culture-specific forms. In Self-Determination Theory (SDT), autonomy is defined as the extent to which individuals fully accept, endorse, and/or stand behind their beliefs and actions, with a sense of agency (e.g., Bao & Lam, 2008; Chirkov, Ryan, Kim, & Kaplane, 2003). Autonomy, as conceptualized in SDT, has been found to be associated with psychological well-being across cultures (e.g., Chirkov & Ryan, 2001; Chirkov et al., 2003; Sheikholeslami & Arab-Moghaddam, 2010; Tov & Diener, 2007).

I proposed this definition as being universal in nature, from which specific cultural variations of autonomy may be derived. I proposed further that the culture-specific part of autonomy may concern the nature of *whose* interests, needs, goals, and expectations are behind one's volitional beliefs and actions. I focused on two culture-specific sources of individuals' interests, needs, goals, and/or expectations: personal and social.

In a Western view, the culture-specific conceptualization of the universal meaning of autonomy manifests as personal choice, self-agency or governance, psychological independence, and individual rights (e.g., Smetana, 2002; Smith & Schwartz, 1997). In the current research, I

referred to this definition as *personal* autonomy, defined as volitional beliefs and actions on behalf of the individuals' own interests, goals, and/or motivations.

However, among the handful of studies conducted in cultures such as East Asia, the relevance of personal autonomy to development is equivocal. For example, there has been a prevailing view that the need for autonomy is greater in Western than in non-Western cultures, such as China (e.g., Iyengar & Lepper, 1999; Schwartz, 2004; Triandis, 2001). In support of this view, the beneficial effects of parents' psychological autonomy support, measured as personal choice, on early adolescents' academic and emotional functioning were found to be generally stronger in the US than in China (Wang, Pomerantz, & Chen, 2007). Similarly, gains in decision-making autonomy better predicted enhanced emotional functioning in the United States than it did in China (Qin, Pomerantz, & Wang, 2009).

Why do these cultural differences exist? One possibility is that the specific Western conceptualization of autonomy may not be appropriate in Chinese culture. For example, Bao and Lam (2008) found that interpreting autonomy as personal choice may not be perceived by Chinese youth as corresponding to their sense of autonomy. In a similar vein, others (e.g., Brindley, 2011; Chan, 2002; Cheng, 1971) have argued that some aspects of civil liberties that are implicated in personal autonomy (e.g., radical free expression of individuals' will) are incompatible with Confucianism. Guided by long-lasting Confucian ideology, traditional Chinese socialization goals and practice encourage self-inhibition and self-sacrifice and de-emphasize self-assertion (e.g., Yang, 1981). Thus, universal autonomy may be expressed differently in China than in the West.

Indeed, a sense of *agency* can be accomplished in various ways (Maehr, 1974). Relatedly, Miller (2003) pointed out that one major limitation of SDT is that only a personal form of agency

is encompassed in the SDT conceptualization of autonomy. Expanding on SDT, Miller argued a personal *versus* social agency perspective. According to her, a sense of personal agency is linked with acting in a self-directed manner. Social agency, in contrast, is associated with acting on the basis of social requirements and expectations. Recently, Trommsdorff (2012) made a similar proposition. However, those arguments might create a paradox. In other words, self-directed behaviors can be “socially expected” and socially-directed behaviors can be “self-expected”.

Borrowing and revising on both Miller (2003) and Trommsdorff’s (2012) ideas, I proposed a *social* form of autonomy in Chinese culture, which refers to volitional actions that emerge out of interests, requirements, and/or expectations of those who are in individuals’ social systems (e.g., significant others).

Similar to the conceptualizations of autonomy, the universal as well as the culture-specific forms of relatedness are discussed below.

Relatedness: universal vs. culture-specific forms. Consistent with both SDT and other related theories (e.g., Baumeister & Leary, 1995; Harlow, 1958), I conceptualized the universal form of relatedness as felt connectedness/closeness to others. However, inconsistent findings have emerged regarding the relevance of relatedness in different cultures. For example, some cultural theorists described Americans as valuing relatedness less than do the Japanese (e.g., Guisinger & Blatt, 1994; Markus & Kitayama, 1991; Triandis, 1995). In support of this, Dennis et al. (2007) found that there was greater encouragement of relatedness among Japanese mothers than U.S. mothers. Similarly, Chinese mothers scored higher than Canadian mothers on encouragement of relatedness for infants (Liu et al., 2005). There also has been evidence that the desire for close relationships is profound in the United States, as well as in Japan (e.g.,

Baumeister & Leary, 1995). Similar to that discussed above for autonomy, a potential resolution to this controversy is that relatedness might take varying forms depending on cultural context.

For example, in their seminal article, Rothbaum, Pott, Azuma, Miyake, and Weise (2000) provided a lifespan perspective on Japanese - U.S. differences in relatedness. These authors proposed that, from infancy to adulthood, the developmental paths of close relationships follow two different patterns of relatedness: symbiotic harmony and generative tension in Japan and the United States, respectively. *Symbiotic harmony* emphasizes union in infancy, others' expectations in childhood, the stability of relationships with parents and peers in adolescence, and assurance about the mate relationship in adulthood. *Generative tension* values separation and reunion in infancy, personal preferences in childhood, the transfer of closeness from parents to peers in adolescence, and trust in adulthood.

Inspired by these ideas, I explored the existence of two potentially culturally distinctive forms of relatedness that could help individuals experience or maintain interpersonal closeness during their social interactions: accommodation and distinctiveness. Specifically, *accommodation* is characterized by valuing similarities between the self and others, involving processes such as avoidance of interpersonal conflicts. *Distinctiveness*, the second proposed form of relatedness, appreciates and values self-other differentiation through processes such as openness to and respect for each other's views.

However, culture itself is not a static entity but a dynamic system of meanings and practices (e.g., Cohen & Kitayama, 2007; D' Andrade, 2001; Giddens, 1984; Kitayama, 2002). Traditional Chinese traits such as fatalism and defensiveness have been found to be modified by modern traits such as optimism and assertiveness in Taiwan (e.g., Yang, 1996) and Mainland

Chinese (Zhou & Zhang, 2007) societies, under the ongoing social and cultural changes. The potential for psychological transformation also could be the case for autonomy and relatedness.

Autonomy and Relatedness in Contemporary Mainland China

Social transformation and autonomy and relatedness. As discussed earlier, Confucianism prescribed the traditional Chinese socialization goals and practice as valuing conformity and self-inhibition and de-valuing self-assertion. The predominance of Confucian ideology in China can be traced to its origin in Han Dynasty about 2,000 years ago and was promoted by the Chinese state from the Sui Dynasty (581-618) until the fall of the Qing Dynasty (1911). Later on, although weakened by anti-Confucianism social movements, such as the 4 May 1919 and the Great Cultural Revolution of 1966-1976, the Confucian influence still remains among Chinese people (e.g., Cheng, 2001). Thus, autonomy in traditional Chinese cultural contexts is very likely to be manifested as social autonomy and relatedness as accommodation.

Mainland China represents a significantly large proportion (19.2%) of the world's population ("List of Countries by Population", 2011). Further, Mainland China has been undergoing rapid and dramatic social, political, economic, and demographic changes towards the Western-dominated globalization since China has opened up to the rest of the world at the end of 1970s. As social changes towards globalization (or Westernization) continue, Mainland China could be considered an ideal social laboratory in which both culturally specific forms of autonomy and relatedness as proposed may be observed. "Millennial generation" Chinese youth are exposed to both traditional Chinese values and modern Western ideology. Thus, it would be of both theoretical and practical significance to explore contemporary Chinese youth's understanding of autonomy and relatedness.

Context specificity of autonomy and relatedness. The ways in which autonomy and relatedness are expressed also may vary by specific context within culture. Ecological psychologists have argued that everyday social environments have a powerful influence on individuals' behaviours, thoughts, and feelings (e.g., Barker, 1965; Bronfenbrenner, 1977) and that individuals act selectively towards their immediate environments (Wicker, 1979). Indeed, research conducted in Canada (e.g., Helwig & Kim, 1999) and China (Helwig, Louise, Tan, & Boyd, 2003) has revealed that adolescents' social judgments and reasoning are sensitive to social contexts, such as peer, family, and school. For example, Chinese adolescents prefer consensus decision-making procedures most strongly in the family and prefer adult authority procedures most strongly in the school. Similarly, with potentially differing expectations and dynamics across those contexts, Chinese adolescents' conceptions of autonomy and relatedness may vary accordingly and this speculation was examined in the current research.

Sex differences in autonomy and relatedness. One of the outstanding features of traditional Chinese society has been the differential treatment of children on the basis of their sex, with boys occupying a higher status in social life than do girls (Ho, 1986, 1987). Accordingly, male university students were found to score higher than females on individual traditionality (Xu & Cao, 2000; Zhang, Zheng, & Wang, 2003). However, boys and girls of the millennial generation have relatively equal access to modern experiences. For example, Xu and Cao also indicated that there were no significant sex differences in modernity scores. Therefore, in the current research, potential sex differences in the endorsement of various forms of autonomy and relatedness were explored.

The Present Dissertation

In summary, the goals of the current research program were twofold. One was to propose and validate empirically the proposed two-level (universal and culture-specific) model for both autonomy and relatedness. Another goal was to develop reliable and valid measures of autonomy and relatedness. To achieve these goals, I conducted a sequence of three studies. Study 1 (reported in Chapter 2) and Study 2 (reported in Chapter 3) focused on the development of my measures for autonomy and relatedness. Study 3 (reported in Chapter 4) was designed to test empirically the two-level models, based on the measures derived from Studies 1 and 2. In addition, across the three studies, I explored potential contextual and sex differences in Chinese youth's endorsement of the diverse forms of autonomy and relatedness. Finally, I have provided a general discussion and conclusions section in Chapter 5.

References

- Ainsworth, M. D. S. (1976). *System for rating maternal care behavior*. Princeton, NJ: Methuen.
- Allen, J. P., Hauser, S. T., Bell, K. L., & O'Connor, T. G. (1994). Longitudinal assessment of autonomy and relatedness in adolescent-family interactions as predictors of adolescent ego development and self-esteem, *Child Development*, 65(1), 179-194.
doi: 10.1111/j.1467-8624.1994.tb00743.x
- Bao, X., & Lam, S. (2008). Who makes the choice? Rethinking the role of autonomy and relatedness in Chinese children's motivation. *Child Development*, 79(20), 269-283.
doi: 10.1111/j.1467-8624.2007.01125.x
- Barker, R. G. (1965). Explorations in ecological psychology. *American Psychologist*, 20(1), 1-14. doi: 10.1037/h0021697
- Baumeister, R., & Leary, M. (1995). The need to belong: Desire for interpersonal attachments as a function of human motivation. *Psychological Bulletin*, 117, 497-529. doi: 10.1037/0033-2909.117.3.497
- Berk, L. E. (2008). *Exploring lifespan development*. Boston: Allyn and Bacon.
- Blos, P. (1979). *The adolescent passage*. New York: International Universities Press.
- Brindley, E. (2011). Moral autonomy and individual sources of authority in the *analects*. *Journal of Chinese Philosophy*, 38(2), 257-273. doi: 10.1111/j.1540-6253.2011.01648.x
- Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation: Anxiety and anger*. New York: Basic Books.
- Bowlby, J. (1982). *Attachment and loss: Vol. 1. Attachment*. New York: Basic Books (Original work published 1969).

- Chan, J. (2002). Moral autonomy, civil liberties, and Confucianism. *Philosophy East and West*, 52(3), 281-310.
- Cheng, C. (1971). Dialectic of Confucian morality and metaphysics of man. *Philosophy East and West*, 21(2), 111-123.
- Cheng, C. (2001). Classical Chinese philosophy in a global context. *The proceedings of the twentieth world congress of philosophy, vol.12. Intercultural philosophy* (pp.13-23). doi: 10.5840/wcp2020011250
- Chirkow, V. I., & Ryan, R. M. (2001). Parent and teacher autonomy support in Russian and US adolescents: Common effects on well-being and academic motivation. *Journal of Cross-Cultural Psychology*, 32(5), 618-635. doi: 10.1177/0022022101032005006
- Chirkov, V., Ryan, R. M., Kim, Y., & Kaplan, U. (2003). Differentiating autonomy from individualism and independence: A self-determination theory perspective on internalization of cultural orientations and well-being. *Journal of Personality and Social Psychology*, 84(1), 97-110. doi: 10.1037/0022-3514.84.1.97
- Cohen, D., & Kitayama, S. (2007). Cultural psychology: This stanza and the next. In S. Kitayama & D. Cohen (Eds.), *Handbook of cultural psychology* (pp.847-851). New York: The Guilford Press.
- D'Andrade, R. (2001). A cognitivist's view of the units debate in cultural anthropology. *Cross-Cultural Research*, 35, 242-257.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum Press.
- Deci, E. L., & Ryan, R. M. (1987). *The support of autonomy and the control of behaviour*. New York: Plenum.

- Erikson, E. H. (1950). Growth and crises of the "healthy personality." In M. J. E. Senn (Ed.), *Symposium on the healthy personality* (pp. 91-146). Oxford, England: Josiah Macy, Jr. Foundation.
- Grotevant, H. D., & Copper, C. R. (1985). Patterns of interaction in family relationships and the development of identity exploration in adolescence. *Child development*, 56, 415-428.
- Guisinger, S., & Blatt, S. J. (1994). Individuality and relatedness: Evolution of a fundamental dialectic. *American Psychologist*, 2, 104 -111.
- Harlow, H. F. (1958). The nature of love. *American Psychologist*, 13, 673-685.
- Helwig, C. C., Arnold, M. L., Tan, D., & Boyd, D. (2003). Chinese adolescents' reasoning about democratic and authority-based decision making in peer, family, and school contexts. *Child Development*, 74(3), 783-800. doi: 10.1111/1467-8624.00568
- Ho, D.Y. F. (1986). Chinese patterns of socialization: A critical review. In M. H. Bond (Ed.), *The psychology of the Chinese people* (pp. 1-35). Hong Kong: Oxford University Press.
- Ho, D. Y. F. (1987). Fatherhood in Chinese culture. In M. E. Lamb (Ed.), *The father's role: Cross-cultural perspectives*. Hills-dale, NJ: Erlbaum.
- Iyengar, S. S., & Lepper, R. (1999). Rethinking the value of choice: A cultural perspective on intrinsic motivation. *Journal of Personality and Social Psychology*, 76(3), 349-366. doi: 10.1037/0022-3514.76.3.349
- Kagitcibasi, C. (1996). The autonomous-relational self: A new synthesis. *European Psychologist*, 1(3), 180-186. doi: 10.1027/1016-9040.1.3.180
- Kitayama, K. (2002). Culture and basic psychological processes- Toward a system view of culture: Comment on Oysterman et al. (2002). *Psychological Bulletin*, 128(1), 89-96.

- Liu, M., Chen, X., Rubin, K., Zheng, S., Cui, L., Chen, H., & Wang, L. (2005). Autonomy- vs. connectedness-oriented parenting behaviors in Chinese and Canadian mothers. *International Journal of Behavioral Development*, 29(6), 489-495. doi: 10.1080/01650250500147063
- Maehr, M. (1974). Culture and achievement motivation. *American Psychologist*, 29, 887-896.
- Markus, H. R., & Kitayama, S. (1991). Culture and self: Implications for cognition, emotion and motivation. *Psychological Review*, 98, 224-253. doi: 10.1037/0033-295X.98.2.224
- Miller, J. (2003). Culture and agency: Implications for psychological theories of motivation and social development. In V. Murphy-Berman & J. Berman (eds.), *Nebraska Symposium on Motivation: Vol. 49. Cross-cultural differences in perspectives on the self* (pp.59-92). Lincoln, NE: University of Nebraska Press.
- Qin, Li., Pomerantz, E. M., & Wang, Q. (2009). Are gains in decision- making autonomy during early adolescence beneficial for emotional functioning? The case of the United States and China. *Child Development*, 80(6), 1705-1721. doi: 10.1111/j.1467-8624.2009.01363.x
- Rothbaum, F., Pott, M., Azuma, H., Miyake, K., & Weisz, J. (2000). The development of close relationships in Japan and the United States: Paths of symbiotic harmony and generative tension. *Child Development*, 71(5), 1121-1142. doi: 10.1111/1467-8624.00214
- Ryan, R.M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American psychologist*, 55, 68-78. doi: 10.1037/0003-066X.55.1.68
- Schwartz, S. H. (2004). Mapping and interpreting cultural differences around the world. In H. Vinken, J. Soeters, & P. Ester (Eds.), *Comparing cultures: Dimensions of culture in a comparative perspective* (pp.43-73). Leiden, the Netherlands: Brill.

- Sheikholeslami, R., & Arab-Moghaddam, N. (2011). Relations of autonomy and adjustment in Iranian college students: A cross-culture study of self-determination theory. *Procedia Social and Behavioral Sciences*, 5, 1831-1835. doi:10.1016/j.sbspro.2010.07.373
- Shweder, R., & Sullivan, M. (1993). Cultural psychology: Who needs it? *Annual Review of Psychology*, 44, 497-523. doi: 10.1146/annurev.ps.44.020193.002433
- Smith, P., & Schwartz, S. (1997). Values. In J. Berry, M. Segall, & C. Kagitcibasi (Eds.), *Handbook of Cross-Cultural Psychology, Vol. 3. Social behaviour and applications* (2nd ed., pp.78-118). Needham Heights, MA: Allyn & Bacon.
- Smetana, J. (2002). Culture, autonomy, and personal jurisdiction in adolescent-parent relationships. In H. W. Reese & R. Kail (Eds.), *Advances in child development and behaviour, Vol. 29* (pp. 51-87). New York: Academic Press.
- Steinberg, L. (1990). Interdependence in the family: Autonomy, conflict, and harmony in the parent-adolescent relationship. In S. Fieldman & G. Elliott (Eds.), *At the threshold: The developing adolescent* (pp.54-89). Cambridge, MA: Harvard University Press.
- Tov, W., & Diener, E. (2007). Culture and subjective well-being. In S. Kitayama & D. Cohen (Eds.), *Handbook of cultural psychology* (pp.691-703). New York: The Guilford Press.
- Triandis, H.C. (1995). *Individualism and collectivism*. Boulder, CO: Westview Press.
- Triandis, H.C. (2001). Individualism-collectivism and personality. *Journal of Personality*, 69, 907-924.
- Trommsdorff, G. (2012). Development of “agentic” regulation in cultural context: The role of self and world views. *Child Development Perspectives*, 6(1), 19-26. doi: 10.1111/j.1750-8606.2011.00224.x

- Vansteenkiste, M., Lens, W., Soenens, B., & Luycks, K. (2006). Autonomy and relatedness among Chinese sojourners and applicants: Conflictual or independent predictors of well-being and adjustment? *Motivation and Emotion*, 30, 273-282.
- Walker, L. J., Taylor, J. H. (1991). Family interactions and the development of moral reasoning. *Child Development*, 62(2), 264–283. doi: 10.1111/j.1467-8624.1991.tb01530.x
- Wang, Q., Pomerantz, E. M., & Chen, H. (2007). The role of parents' control in early adolescents' psychological functioning: A longitudinal investigation in the US and China. *Child Development*, 78(5), 1592-1610. doi: 10.1111/j.1467-8624.2007.01085.x
- Wicker, A. W. (1979). *An introduction to ecological psychology*. Monterey, CA: Brooks/Cole.
- Williams, G. C., & Deci, E. L. (1996). Internalization of biopsychosocial values by medical students: A test of self-determination theory. *Journal of Personality and Social Psychology*, 70(4), 767-779. doi: 10.1037/0022-3514.70.4.767
- Yang, K. (1981). The formation and change of Chinese personality: A cultural-ecological perspective. *Acta Psychologica Taiwanica*, 23, 39-56. (In Chinese).
- Yang, K. (1996). The psychological transformation of the Chinese people as a result of societal modernization. In M. H. Bond (Ed), *The handbook of Chinese psychology* (pp. 479-498). HongKong: Oxford University Press.
- Xu, Y., & Cao, X. (2000). Transformation from traditionality to modernity: The personality differences between students in Beijing and HongKong. *Exploration of Psychology*, 4, 44-49. (In Chinese).
- Zhang, X., Zheng, X., & Wang, L. (2003). Comparative research on individual modernity of adolescents between town and countryside in China. *Asian Journal of Social Psychology*, 6, 61-73.

Chapter 2: Study 1

Exploring Concepts of Autonomy and Relatedness in Mainland Chinese Adolescents

I proposed a two-level (universal and culture-specific) model for both autonomy and relatedness in the current research program. To validate empirically these models, the first step was to develop measures assessing universal and culture-specific forms of autonomy and relatedness.

Adopting the Self-Determination Theory (SDT; e.g., Deci & Ryan, 1985; Ryan & Deci, 2000) approach, *universal autonomy* was conceptualized as the extent to which individuals fully accept, endorse, and/or stand behind their beliefs and actions, with a sense of agency. According to this definition, autonomy can be manifested in a broad array of actions that are salient to individuals in their everyday lives. The existing SDT-based autonomy measures capture only some specific aspects of this definition, such as various cultural practices (e.g., Chirkov et al., 2003; Chirkov, Ryan, & Willness, 2005), and job (Chirkov & Ryan, 2001), and achievement motivation (e.g., Asakawa & Csikszentmihalyi, 2000; Bao & Lam, 2008). Unfortunately, these aspects may not be suitable to assess adolescents' sense of autonomy in each of peer, family, and school contexts.

As discussed earlier, the culture-specific forms of autonomy may concern either the individuals' own or significant others' interests, needs, goals, and/or expectations that are behind one's volitional beliefs and actions. Although some existing instruments (e.g., Allen et al., 1994; Qin et al., 2009; Smetana, 2002; Wang et al., 2007) are thought to measure *personal autonomy*-volitional beliefs and actions on behalf of the individuals' own interests, goals, and/or motivations, there is no measure available to assess another form-*social autonomy*.

The commonly used measures of universal relatedness assess individuals' attachment relationships with their social partners, such as parents, peers, or teachers (e.g., Armsden & Greenberg, 1987; Furrer & Skinner, 2003; Rohner, 1980), their social partners' involvement (e.g., Belmont, Skinner, Wellborn, & Connell, 1992) or encouragement of affiliation (e.g., Liu et al., 2005). Again, these aspects may not sufficiently reflect adolescents' felt connectedness/closeness to significant others in their day-to-day experiences. Moreover, measures that can be used to assess the two proposed culture-specific forms of relatedness (accommodation and distinctiveness) are not available.

To address the measurement limitations of autonomy and relatedness to date, *three* specific goals were set for the current study. The *first* goal of Study 1 was to see whether Chinese adolescents offered descriptors for both universal and culturally-specific forms of autonomy and relatedness in their responses to open-ended questions about situations reflecting autonomy and relatedness. This "naturalistic" approach has been used in the study of other psychological constructs, such as morality (Walker & Pitts, 1998), shyness (Xu, Farver, Yang, & Zeng, 2008), and psychological control (Barber, Xia, Olsen, McNeely, & Bose, 2012). I used both positively (e.g., situations in which the participants felt autonomous or close to others) and negatively keyed (e.g., situations in which the participants did not feel autonomous or close to others) questions to reduce potential response set bias, such that there may be individual differences in the participants' general tendency to agree with certain statements or questions (e.g., Furr & Bacharach, 2013).

The *second* goal of Study 1 was to obtain psychometrically sound autonomy and relatedness scenarios that could be used to measure culture-specific forms of autonomy and relatedness. Given that the correlations between different constructs assessed by the same

method tend to be higher than those assessed by different methods (e.g., Byrne, 2010), the true distinctions within autonomy (personal vs. social) and relatedness (distinctiveness vs. accommodation) may be obscured by the use of a single method of open-ended questions. Further, as articulated in Campbell and Fiske's (1959) classic work, the multitrait-multimethod (MTMM) has been an established approach to evaluating the method effects.

As a *third* goal of the current study, I explored whether the presence of various autonomy and relatedness descriptors may vary across context, as well as the reliabilities of scenario scores across three social contexts. Potential sex differences in adolescents' concepts of autonomy and relatedness were also examined, based on both frequencies of types of descriptors and scenario scores.

Method

Participants

A total of 143 Grade 7, 8, and 9 youth (76 boys; $M_{\text{age}} = 13.36$ yrs; $SD = .96$ yrs, ranging from 11 to 16 years) participated in Study 1. One subsample ($N = 77$) was drawn from a school located in Tianjin, one of the largest modern cities in China. Another subsample ($N = 65$) included students from a school located in the countryside in Hebei province, which is a less developed, rural part of China. The two samples were balanced in terms of participant number¹ ($\chi^2_{(1)} = 1.01, p > .05$) and gender ($\chi^2_{(1)} = .11, p > .05$), but not for grade ($\chi^2_{(2)} = 58.35, p < .001$), with the rural sample comprising Grade 7 and 8 students and the urban one comprising Grade 7 and 9 students. Participants were predominantly of *Han* ethnic background. The parents

¹ Potential differences between urban and rural youth in their endorsement of various forms of autonomy and relatedness were explored, based on both frequencies of descriptors and scenarios scores. A very small number of significant results emerged, which may be attributed to chance variances. Thus no geographically-based findings were reported in the current study.

in general had little education; among 54% of the parents who reported their education, only about 13% of them had received a college diploma or above.

Procedure

Prior to the data collection, ethical clearance from Brock University's Research Ethics Board (see Appendix A) was obtained, followed by approval from the participating school authorities. In China, it is typical for the school authorities to give consent for research participation, in their role as the guardian of the children during the school day. Asking for parental consent or formal child assent tends to be viewed as inappropriate and may cause unnecessary anxiety. However, students were given the option to withdraw and no one declined to participate. Questionnaires were group-administered to students in classrooms by myself and a research associate, in the rural and urban schools, respectively, after the teachers had introduced the researchers to the students. The written questionnaire took approximately 45 minutes to complete.

Measures²

Open-ended questions asking Chinese adolescents about their understanding of the theoretically-derived concepts of autonomy and relatedness were developed for the current study and included in a questionnaire booklet comprising three sections (see Appendix B). In the first section, a universal-level definition of autonomy was provided, followed by open-ended questions asking participants about situations in which they felt autonomous and those in which they did not feel autonomous. The definition of universal autonomy was as follows: *Autonomy*

² Before formal data collection, measures used in the current study were piloted in seven Grade 6 Chinese students in order to evaluate their reactions to the terms for autonomy and relatedness. As a result, the universal autonomy definition was added to the questionnaire booklet.

refers to acting in a way that is true to one's beliefs or values. In other words, one's actions are volitional or one accepts, endorses, and/or stands behind his/her actions. In the second section of the booklet, similar questions to those above were asked about youth's conceptions of relatedness. The definition of universal relatedness was *Think about a time when you were with your friends/parents/teacher and you felt very close or connected to them.*

The third section of this survey booklet included six scenarios that were used to assess the two culturally specific forms of autonomy (social and personal) and relatedness (accommodation and distinctiveness). The design of the scenarios was based on the conceptualizations of culture-specific forms of autonomy and relatedness, as proposed in the current research program. More specifically, both social autonomy and accommodation were supposed to fit into the framework of *interdependent self* that individuals see themselves as relatively connected with others. Personal autonomy and distinctiveness reflect the concept of *independent self* that individuals see themselves as relatively differentiated from others.

There were two scenarios for each of three social contexts (family, school, peer). One was expected to engender volitional actions that emerge out of interests, requirements, and/or expectations of those who are in individuals' social systems (e.g., significant others), as well as to elicit interpersonal closeness by valuing similarity between self and others. Thus, this scenario was designed to reflect both *social autonomy* and *accommodation*. An example of a scenario reflecting social autonomy and accommodation was "Think of a time when you disagreed with your best friend and you did what YOUR FRIEND wanted, instead of what you wanted".

Another scenario was designed to reflect both *personal autonomy* and *distinctiveness*, as it implicated that volitional actions could occur on behalf of one's own interests and needs, and that interpersonal closeness could be established through appreciating and valuing self-other

differentiation. An example of a scenario reflecting personal autonomy and distinctiveness was “Again, think of a time when you disagreed with your best friend and you did what YOU wanted, instead of what your friend wanted”.

Each scenario in this third section was followed by two questions. The first question asked the participants to describe the situation. The second question asked how the participants had felt in that situation. Responses were rated on two 5-point scales, with one ranging from 1 (did not feel autonomous at all) to 5 (felt very autonomous), and another ranging from 1 (did not feel close to my friend/parent/teacher at all) to 5 (felt very close to my friend/parent/teacher). Higher scores indicate greater endorsement of each of these two forms of autonomy and relatedness.

The order of the three social contexts for both open-ended questions and scenarios was counterbalanced. The questionnaire booklet was translated into Chinese with a back-translation procedure (Brislin, 1980) and the translation was considered adequate by the current investigator.

Coding and Reliability

Autonomy and relatedness descriptors. An autonomy and relatedness descriptor coding manual was developed for the current study (see Appendix C). A descriptor refers to a statement that describes specific situations in which youth may feel autonomous or connected to others.

Responses to the first question “In the space below, explain what happened at that time” and to the second one “What was it about that situation that made you feel autonomous/did not make you feel autonomous” were combined to code for autonomy descriptors. Similarly, responses to questions “In the space below, explain what happened at that time” and “What was it that made you feel very close or connected/ did not make you feel close or connected to your friends/parent/teacher” were combined to code for relatedness descriptors. In both cases of

autonomy of relatedness, the first question was intended to capture the *behavioural/action* aspect of autonomy/relatedness and the second question implicated *mental representations/beliefs* of those who felt autonomous/close to others. However, very few participants' responses tapped both aspects of autonomy and relatedness described above. Therefore, responses to the two questions were not coded separately.

Coding of the participants' responses was both exclusive and exhaustive. In the case that more than one answer to a given question was provided, only the first response was coded. Only a small number of participants gave multiple answers. Responses that did not make sense or were irrelevant to the questions were put into an "other" category. Such exclusive, as well as exhaustive, coding strategy was used to simplify analysis (Bakeman & Gottman, 1997).

Further, the descriptor codes were grouped according to a priori criteria based on the theoretical frameworks of autonomy (universal, personal, social autonomy) and relatedness (universal, accommodation, distinctiveness) discussed above. For example, the descriptor *stood up for one's actions* was coded as universal autonomy; *acting on others' reasonable expectations* as social autonomy; *got what one wanted/needed* as personal autonomy; *being caring and warm to each other* as universal relatedness; *adjusting oneself to someone else* as accommodation; and *showing openness/sensitivity to and respect for each other's views* as distinctiveness (see Table 1 for autonomy and relatedness descriptors and grouping).

To conduct inter-rater reliability analyses, 20% of the responses balanced by gender, grades, and regions were randomly selected from the current sample and independently coded by the research associate and myself. The interrater reliability was good, as assessed by Cohen's *Kappa* coefficients ($k = .76$). The first author coded the remainder of the data. The descriptor groupings were also checked for interrater reliability ($k = .91$).

Table 1

Autonomy and relatedness descriptors and grouping

Concepts of autonomy	Descriptors and example responses	Concepts of relatedness	Descriptors and example responses
<i>Universal autonomy</i>	<p>Stood up for one's actions (e.g., "I confessed to my parents, as I did something wrong")</p> <p>Sense of mastery/sense of control (e.g., "I could be of help to my parents, as they did not receive much education")</p> <p>Made a difference/ had an influence on someone or an event (e.g., "I discussed class affairs with my teacher")</p> <p>Sharing emotions/opinions (e.g., "I shared my joy with friends")</p> <p>Independence (e.g., "I got things done without my parents' help")</p> <p>Did things that one was forced to do (e.g., "I was hesitate to say "no" to friends when I did not want to do something they proposed)</p> <p>Did not stand up for one's actions (e.g., "My friend was punished for my own wrong doings and I didn't do anything")</p> <p>Being dependent on someone else (e.g., "I needed friend's help when playing games")</p> <p>Felt incompetent/ no sense of control (e.g., "As I had no clue of the new computer game my friends were talking about, I did not play that game")</p>	<p><i>Universal relatedness</i></p> <p><i>Accommodation</i></p>	<p>Being caring and warm to each other (e.g., "My friend comforted me when I was in bad mood")</p> <p>Having fun together/confiding in each other (e.g., Talking to my best friend about what was bothering me made me feel close to her")</p> <p>Not being caring and warm/did not experience others' care and warmth (e.g., "My parents cared more about my marks than how I felt")</p> <p>Adjusting oneself to someone else (e.g., "My best friend and I always agreed with each other")</p> <p>Being attentive to each other's thoughts and feelings (e.g., "My mom always knew my favorites)</p> <p>Relationship-based (e.g., "Close friends are committed to helping each other")</p> <p>Being criticized or criticizing others (e.g., "My teacher always criticized me")</p> <p>Not being attentive to each other's thoughts and feelings (e.g., "Sometimes my parents did not know what I really wanted")</p> <p>Conflicts/disagreements (e.g., "My friend and I had an argument")</p>
<i>Social autonomy</i>	<p>Helping (e.g., "I helped my friends financially")</p> <p>Sharing things (e.g., "I shared my stuff such as books with friends")</p> <p>Acting on others' reasonable expectations (e.g., I did things that my parents (teacher) did not place too much pressure on me")</p> <p>Did not meet others' expectations (e.g., "I did not get the marks the teacher expected on me")</p>	<i>Distinctiveness</i>	<p>Trust (e.g., "My parents trusted me)</p> <p>Showing openness/sensitivity to and respect for each other's views (e.g., "When I talked about my opinions on something, my friends listened")</p> <p>No trust (e.g., "I did not trust my friend")</p> <p>Showing no openness/sensitivity to and respect for the views of others/my views (e.g., "My friends did not listen to my opinions when we played game together")</p>
<i>Personal autonomy</i>	<p>Trying hard to succeed or excel in something (e.g., "I tried my best to do well on my schoolwork")</p> <p>Freedom of choice (e.g., "My mom gave me the permission to buy the books I liked")</p> <p>Initiative/leadership (e.g., "I played a leading role in organizing activities such as a birthday party")</p> <p>Got what one wanted/needed (e.g., "When I proposed to do shopping, my friends agreed")</p> <p>Did not get what one wanted/needed (e.g., "My request to the teacher for an alternative assignment was rejected")</p> <p>Personal rights violated (e.g., "My parents checked on my messages and phone calls")</p>		

Note. "Sharing emotions/opinions" is marginally between categories of universal autonomy and social autonomy; however, it was assigned to the universal level.

Autonomy and relatedness scenarios. After each scenario, although there was a question asking the participants to describe the situation related to that scenario, not much information was provided by the participants. During data collection, when I probed for the reasons why they did not fill out information in that section, some children considered the scenarios to be clear enough and no more descriptions were needed. Thus, no examples from the participants' descriptions following the scenarios, as well as discussion of interjudge agreement on responses, were analyzed.

Results

Analytic Strategies

To detect the existence of both universal and culture-specific levels of autonomy and relatedness descriptors, frequencies of each of the three forms of autonomy and relatedness descriptors in each social context were calculated across participants. Then, within each form of autonomy (*universal, social, personal*) and relatedness (*universal, accommodation, distinctiveness*), distributions of the overall frequencies of various descriptors (collapsed across contexts) were tested through one-way chi-square analyses to determine if various descriptions were equally prevalent.

To explore whether or not the relative prevalence of those descriptors varied within social contexts, additional one-way chi-square tests were conducted on the frequencies of each form of autonomy and relatedness. Potential sex differences in autonomy and relatedness categories also were examined by testing a series of contingency tables.

Descriptive statistics (means, SDs, distributions) were used to examine the psychometric properties of autonomy and relatedness scenario scores. Then the internal consistency

reliabilities of those scores across three social contexts were tested. A series of one-way MANOVAs were run to explore sex differences in scenario scores.

Autonomy Descriptors

Universal autonomy. One-way chi-square analyses indicated that when Chinese youth reported that they “felt autonomous”, the overall frequencies of various universal autonomy descriptors (collapsed across contexts) were not evenly distributed ($\chi^2_{(3)} = 27.3, p < .001$) (see Figure 1 for the distribution of descriptors), with *sharing emotions/opinions* the most common descriptor and *stood up for one’s actions* the least common descriptor. *Independence* emerged as a descriptor only in the family context.

In situations in which youth “did not feel autonomous”, the overall frequencies of universal autonomy descriptors (collapsed across contexts) were not evenly distributed ($\chi^2_{(3)} = 37.31, p < .001$) (see Figure 2 for the distribution of descriptors); *was forced to do something* was the most often mentioned descriptor and *being dependent on someone* the least often reported.

Further, regarding whether the relative prevalence of universal autonomy descriptors varied within the three social contexts, additional one-way chi-square analyses revealed that *sharing emotions/opinions* was relatively more often reported than were other descriptors in both the peer ($\chi^2_{(3)} = 49.91, p < .001$) and the family ($\chi^2_{(4)} = 45.26, p < .001$) contexts when youth “felt autonomous”. However, in the school context, *sense of mastery or control* was the most prevalent descriptor, $\chi^2_{(3)} = 17.41, p < .001$. Within the three social contexts, *did things that one was reluctant to do/was forced to do something* was the most prevalent descriptor when youth

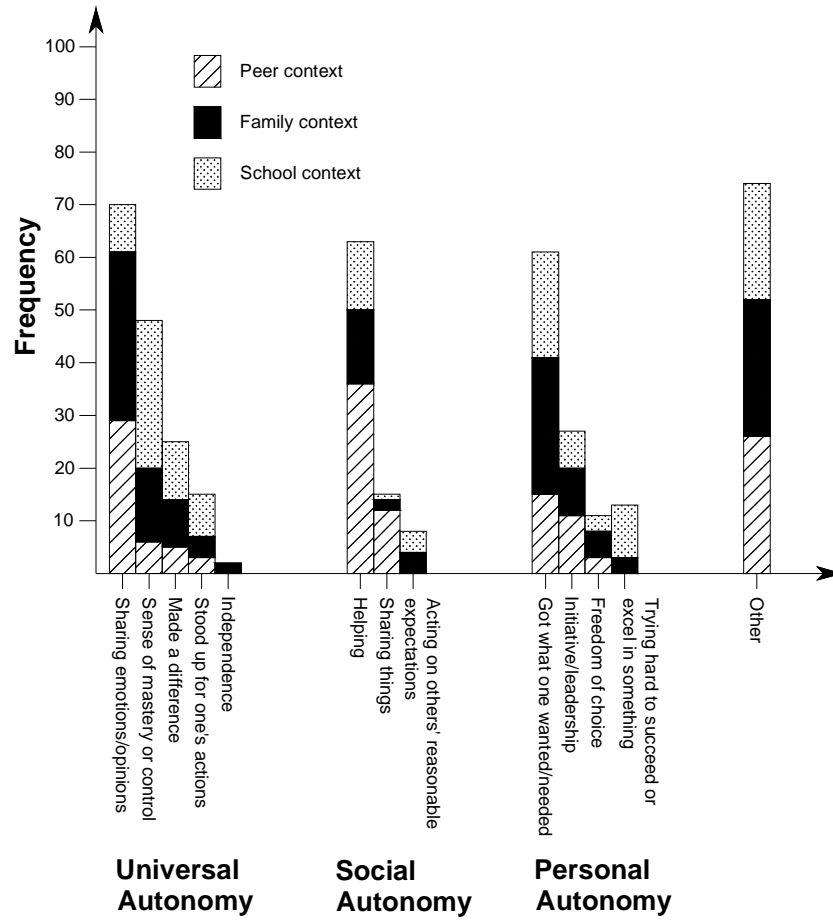


Figure 1. Number of participants giving autonomy descriptors in “felt autonomous” situations

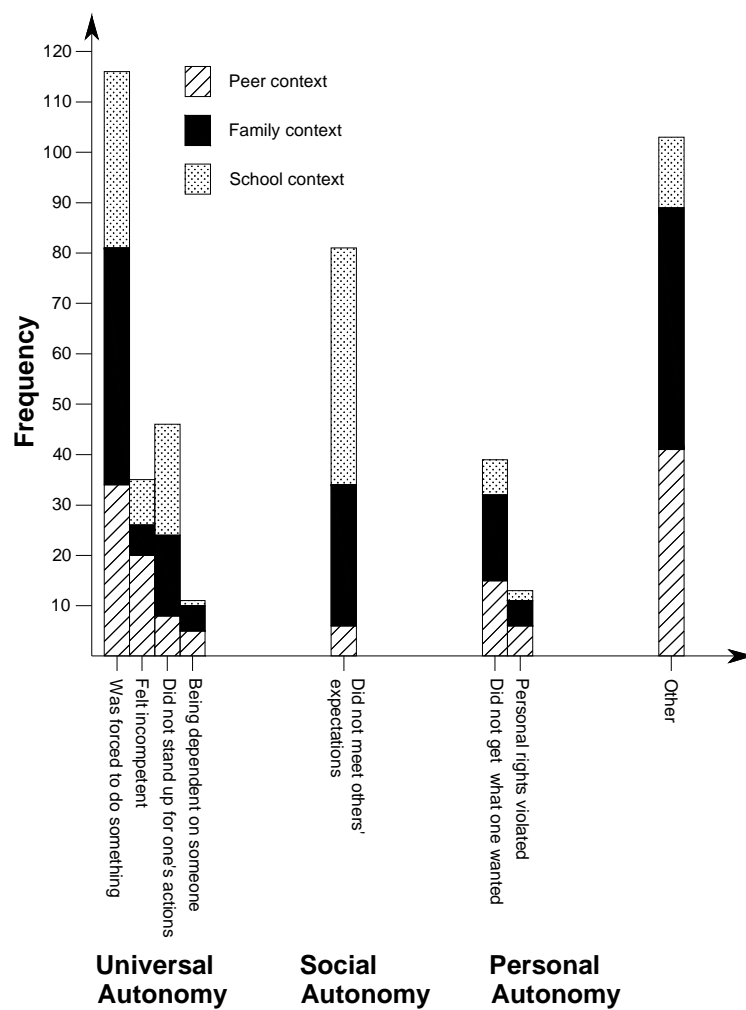


Figure 2. Number of participants giving autonomy descriptors in “did not feel autonomous” situations

reported that they “did not feel autonomous” ($\chi^2_{(3)} = 37.82$ in the peer, $\chi^2_{(3)} = 61.71$ family, and $\chi^2_{(3)} = 39.92$ school contexts, respectively, $ps < .001$).

Social autonomy. One-way chi-square analyses indicated that when Chinese youth reported they “felt autonomous”, the overall frequencies of various social autonomy descriptors (collapsed across contexts) were not evenly distributed ($\chi^2_{(2)} = 20.51$, $p < .001$) (see Figure 1 for the distribution of descriptors), with *helping* the most common descriptor and *acting on others’ reasonable expectations* the least common one.

Additional one-way chi-square analyses revealed that across social contexts, *helping* was the most prevalent descriptor ($\chi^2_{(1)} = 11.20$ in the peer, $\chi^2_{(2)} = 12.39$ the family, and $\chi^2_{(2)} = 13.00$ the school contexts, respectively, $ps < .001$).

Did not meet others’ expectations was the only social autonomy descriptor (collapsed across contexts) that emerged when youth “did not feel autonomous” (see Figure 2 for the distribution of descriptors).

Personal autonomy. One-way chi-square analyses indicated that when Chinese youth “felt autonomous”, the overall frequencies of various personal autonomy descriptors (collapsed across contexts) were not evenly distributed ($\chi^2_{(3)} = 21.58$, $p < .001$), with *got what one wanted/needed* the most common descriptor and *freedom of choice* the least common one (see Figure 1 for the distribution of descriptors).

When youth “did not feel autonomous”, the overall frequency (collapsed across contexts) of the personal autonomy descriptor of *did not get what one wanted/needed* was more prevalent than *personal rights violated* ($\chi^2_{(1)} = 4.66$, $p < .05$) (see Figure 2 for the distribution of descriptors).

Further one-way chi-square analyses indicated that within the three contexts, *got what one wanted/needed* was relatively prevalent when youth “felt autonomous”, with $\chi^2_{(2)} = 7.63, p < .05$ in the peer, $\chi^2_{(3)} = 32.86, p < .001$ family, and $\chi^2_{(3)} = 15.50, p < .001$ school contexts, respectively. In the case of “did not feel autonomous”, *did not get what one wanted/needed* was more often mentioned than *personal rights violated* in both peer ($\chi^2_{(1)} = 4.50, p < .05$) and family contexts ($\chi^2_{(1)} = 5.50, p < .05$), but not in the school context ($\chi^2_{(1)} = 1.78, p > .05$).

In summary, descriptors reflecting universal autonomy, social autonomy, and personal autonomy emerged. Within each category of autonomy, specific descriptions were relatively salient. Further, the relative prevalence of the descriptors demonstrated contextual variations.

Relatedness Descriptors

Universal relatedness. Potential differences in overall frequencies of various universal relatedness descriptors (collapsed across contexts) were tested through one-way chi-square analyses. When youth reported they “felt close” (i.e., high relatedness), *being caring and warm to each other* was more prevalent than *having fun together/confiding in each other* ($\chi^2_{(1)} = 7.27, p < .01$) (see Figure 3 for the distribution of descriptors).

Additional chi-square tests indicated that the relative prevalence of various universal relatedness descriptors did not vary among social contexts. *Being caring and warm to each other* was more often reported than *having fun together/confiding in each other* ($\chi^2_{(1)} = 12.49$ in the peer context, $\chi^2_{(1)} = 11.06$ in the family context, and $\chi^2_{(1)} = 22.92$ in the school context, respectively, $ps < .001$).

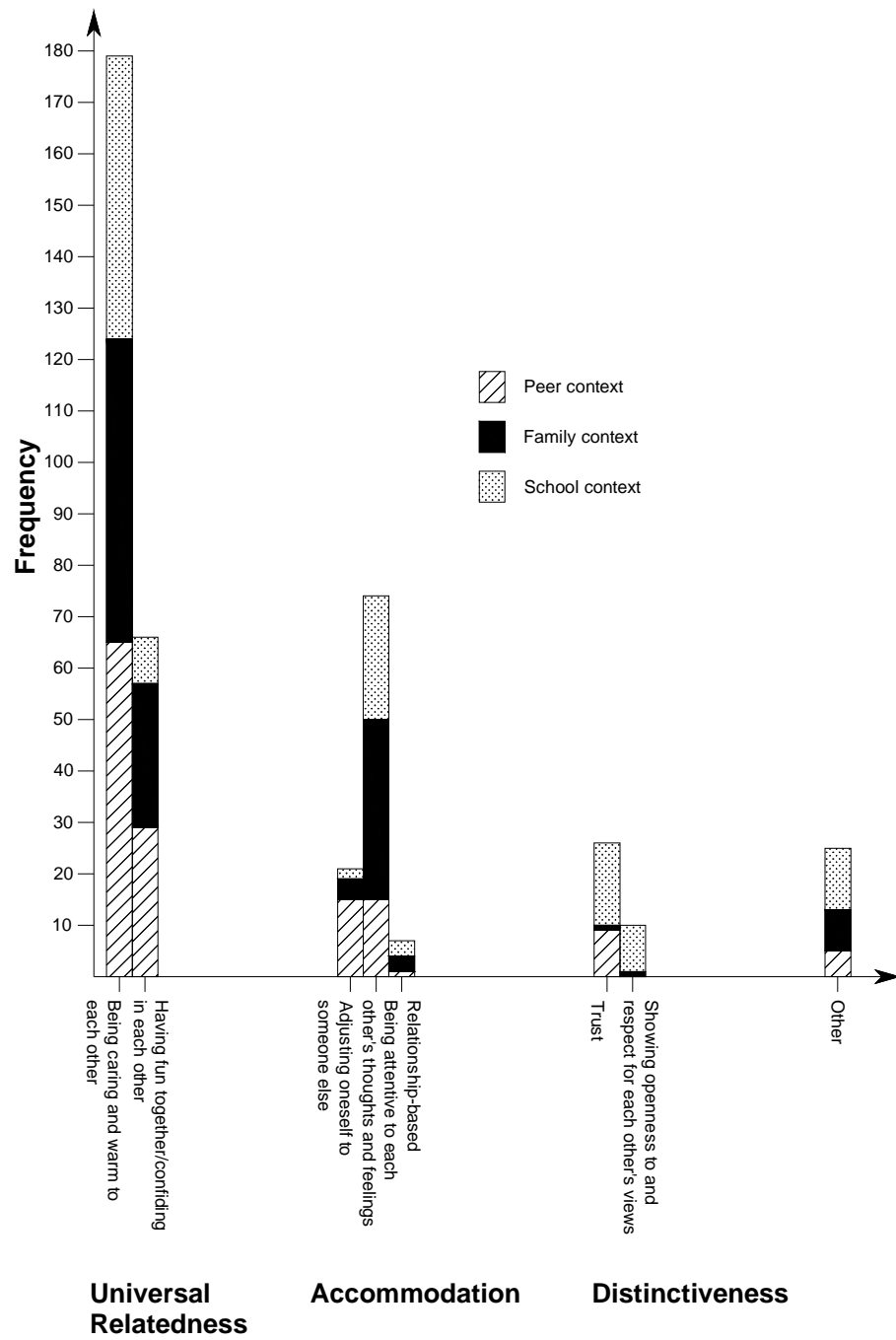


Figure 3. Number of participants giving relatedness descriptors in “felt close” (i.e. high relatedness) situations

When youth reported they “did not feel close” (i.e. low relatedness), *not being caring and warm/did not experience others’ care and warmth* was the only universal relatedness descriptor that emerged (collapsed across contexts) (see Figure 4 for the distribution of descriptors).

Accommodation. One-way chi-square analyses revealed that when youth “felt close”, the overall frequencies of various accommodation descriptors (collapsed across contexts) were not evenly distributed ($\chi^2_{(2)} = 21.84, p < .001$), with *being attentive to each other’s thoughts and feelings* the most often reported and *relationship-based* the least frequently reported (see Figure 3 for the distribution of descriptors).

When youth reported not feeling close, the overall frequencies of descriptors (collapsed across contexts) were not evenly distributed ($\chi^2_{(2)} = 11.45, p < .01$), with *being criticized or criticizing others* the most prevalent and *not being attentive to each other’s thoughts and feelings* the least prevalent one (see Figure 4 for the distribution of descriptors).

Further chi-square analyses indicated that in explaining why the situations made Chinese youth “felt close”, *adjusting oneself to someone else* was relatively prevalent in the peer context ($\chi^2_{(2)} = 12.20, p < .001$), whereas *being attentive to each other’s thoughts and feelings* turned out to be prevalent in both the family ($\chi^2_{(2)} = 47.29, p < .001$) and the school ($\chi^2_{(2)} = 31.92, p < .001$) contexts.

When youth “did not feel close”, *conflicts/disagreements* was relatively prevalent in the peer context ($\chi^2_{(2)} = 42.70, p < .001$), whereas *being criticized or criticizing others* was prevalent in both the family ($\chi^2_{(2)} = 12.67, p < .001$) and the school ($\chi^2_{(2)} = 63.54, p < .001$) contexts.

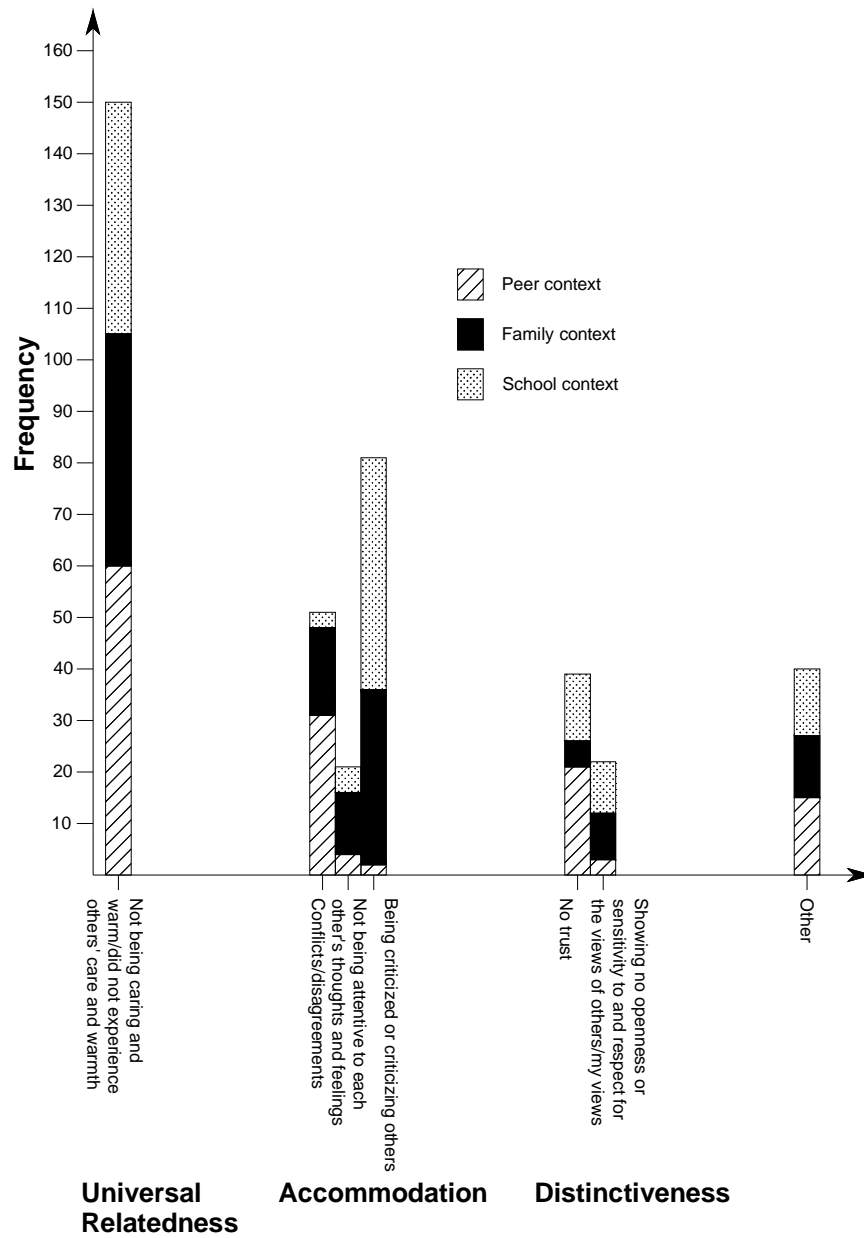


Figure 4. Number of participants giving relatedness descriptors in "did not feel close" (i.e. low relatedness) situations

Distinctiveness. When youth both “felt close” and “did not feel close”, the overall frequencies of distinctiveness descriptors (collapsed across contexts) *trust/no trust* and *showing openness to and respect for each other’s views/ showing no openness to and respect for each other’s views* were evenly distributed ($\chi^2_{(1)} = .75$ for “felt close” and $\chi^2_{(1)} = 1.80$ for “did not feel close”, respectively, $ps > .05$) (see Figures 3 and 4).

In summary, Chinese youth’s responses captured universal, as well as culture -specific forms of relatedness (accommodation and distinctiveness). Within each category of relatedness, some descriptions were relatively more prevalent than others. Again, the relative prevalence of the descriptors demonstrated contextual variations.

Supplemental Analyses

Although not a main focus, I also explored whether specific autonomy and relatedness descriptors were more heavily weighted toward either universal or culturally-specific forms. One-way chi-square analyses showed that *universal* autonomy descriptors (collapsed across contexts) were more prevalent than both *social* and *personal* autonomy (collapsed across contexts), when youth “felt autonomous” ($\chi^2_{(2)} = 9.97, p < .01$) and when they “did not feel autonomous” ($\chi^2_{(2)} = 23.56, p < .001$).

Similarly, one-way chi-square tests indicated the relatively higher prevalence of *universal* relatedness descriptors (collapsed across contexts) than both *accommodation* and *distinctiveness* (collapsed across contexts), for “felt close” ($\chi^2_{(2)} = 61.45, p < .001$) and for “did not feel close” ($\chi^2_{(2)} = 14.44, p < .001$).

Sex Differences in Autonomy and Relatedness Categories

Three sets of 2 (boys vs. girls) X 3 (universal autonomy, social autonomy, personal autonomy) contingency tables revealed no statistically significant sex differences in Chinese adolescents' endorsement of three forms of autonomy across contexts, in situations in which they "felt autonomous". Similar analyses were conducted on the responses when youth "did not feel autonomous" and no significant sex effects were found.

As with autonomy, three sets of 2 (boys vs. girls) X 3 (universal relatedness, accommodation, distinctiveness) contingency tables were conducted for each of the "felt close" and "did not feel close" cases and no significant sex differences in Chinese adolescents' endorsement of three forms of relatedness emerged.

Autonomy and Relatedness Scenario Rating Scores

Means and distributions of two forms of autonomy and relatedness scenario scores.

Table 2 also shows that the means of two forms of autonomy and relatedness scenario scores ranged from 2.41 to 3.54. Most were approximately at the mid point of the 1 to 5 point rating scales. This finding suggests the relevance of the culture-specific forms of autonomy (social and personal) and relatedness (accommodation and distinctiveness) scenarios designed for the current study to Chinese youth. In addition, as can be seen in Table 2, those scenario scores were normally distributed and the skewness and kurtosis values of each scenario were acceptable (Tabachnick & Fidell, 2001).

Reliabilities of two forms of autonomy and relatedness scenario scores. Table 2 also shows that the two forms of autonomy and relatedness scenario scores were moderately consistent across three social contexts (α s ranged from .66 to .73) (e.g., Byrne, 2010).

First-order correlations among scenario scores. As indicated in Table 3, for each of the three social contexts, social autonomy was found to be significant and moderately correlated

Table 2

Psychometric qualities of autonomy and relatedness scenario scores in Study 1

	N	Mean	SD	Skewness (SE)	Kurtosis (SE)	Cronbach's Alpha (α)
Social autonomy (peer context)	131	2.54	1.12	.11(.21)	.21(.42)	.66
Social autonomy (family context)	131	2.43	1.30	.42(.21)	.21(.42)	
Social autonomy (school context)	134	2.41	1.29	.55(.21)	.21(.42)	
Composite social autonomy scores (across three contexts)	132	2.47	.98	.38(.21)	-.45(.42)	.67
Personal autonomy (peer context)	130	3.54	1.25	-.44(.21)	.21(.42)	
Personal autonomy (family context)	134	3.50	1.27	-.46(.21)	.21(.42)	
Personal autonomy (school context)	132	3.37	1.39	-.30(.21)	.21(.42)	
Composite personal autonomy scores (across three contexts)	134	3.48	1.00	-.09(.21)	-.79(.42)	.73
Accommodation (peer context)	127	2.69	1.27	.21(.22)	.22(.43)	
Accommodation (family context)	129	3.01	1.39	.09(.22)	.21(.42)	
Accommodation (school context)	126	2.67	1.29	.27(.22)	.22(.43)	
Composite accommodation scores (across three contexts)	130	2.80	1.07	.12(.21)	-.76(.42)	.71
Distinctiveness (peer context)	126	2.57	1.31	.30(.22)	.22(.43)	
Distinctiveness (family context)	126	3.16	1.35	-.12(.22)	.22(.43)	
Distinctiveness (school context)	121	2.74	1.35	.19(.22)	.22(.44)	
Composite distinctiveness scores (across three contexts)	125	2.86	1.07	.00(.22)	-.53(.43)	

Note. The autonomy and relatedness scenario scales ranged from 1 to 5.

Table 3

First-order correlations among Study 1 scenario scores

	1	2	3	4	5	6	7	8	9	10	11	12
1. Peer context social autonomy	--	.35**										
2. Peer context accommodation		--										
3. Peer context personal autonomy			--	.13								
4. Peer context distinctiveness				--								
5. Family context social autonomy					--	.46**						
6. Family context accommodation						--						
7. Family context personal autonomy							--	.11				
8. Family context distinctiveness								--				
9. School context social autonomy									--	.46*		
10. School context accommodation										--		
11. School context personal autonomy											--	.16
12. School context distinctiveness												--

* $p < .05$. ** $p < .01$.

N = 121-134

with accommodation. The correlations between personal autonomy and distinctiveness were not significant within each context.

Sex differences in scenario scores. Four sets of one-way MANOVAs were conducted to explore potential sex differences in Chinese adolescents' endorsement of the two forms of autonomy (social autonomy vs. personal autonomy) and relatedness (accommodation vs. distinctiveness). Each of the four constructs was measured by scenario scores in three social contexts (peer, family, school). No significant effects were found.

Discussion

In Study 1, I aimed to provide initial empirical evidence for the proposed conceptual distinctions within autonomy (*social* and *personal*) and relatedness (*accommodation* and *distinctiveness*), as well as for *universal* level autonomy and relatedness. In general, the current findings lend important support for my theorizing about the two-level models.

Based on open-ended questions about autonomy, diverse descriptors about *social autonomy* and *personal autonomy* emerged, with specific descriptions relatively salient within each category of autonomy.

In particular, for *social autonomy*, the most prevalent descriptors were *helping* and *did not meet others' expectations*. These aspects fit within the Confucian ideology that guides Chinese socialization goals and practice, such as self-inhibition and self-sacrifice (e.g., Yang, 1981). The most common *personal autonomy* descriptors appeared to be *got what one wanted/needed* and *did not get what one wanted/needed*. The presence of *personal autonomy* descriptors are consistent with conception of personal autonomy that is embedded in the framework of Western civil liberties (e.g., Chan, 2002). Also, the presence of those descriptions are in line with the emerging literature indicating that some concepts associated with Western

ideology, such as self-determination rights, have been found to prevail in Chinese adolescents (Lahat, Helwig, Yang, Tan, & Liu, 2008).

Responses to open-ended questions about relatedness reflected my a priori conceptualizations of *accommodation* and *distinctiveness*. Among the *accommodation* descriptors, *being attentive to each other's thoughts and feelings* and *being criticized or criticizing others* were relatively prevalent. Despite their presence, the frequencies of *distinctiveness* descriptors were relatively low, especially in the family context. Interestingly, our findings of relatedness shared some similarities with a recent cross-cultural study on Japanese and American children's conceptions of "true friendship", in which the most salient elements of interpersonal closeness were *sharing* and *non-choice based* in Japan and *personal attributes* and *choice-based* in U.S., respectively (Uchida, 2012).

Sharing emotions/opinions and *was forced to do something* were the most common universal autonomy descriptors, both of which are thought to be consistent with the conceptualizations of universal level autonomy in the current research program. Similarly, the most common descriptors *being caring and warm to each other* and *not being caring and warm/did not experience others' care and warmth* are descriptions about universal relatedness.

It remains an open question why a substantial portion of the participants' responses to open-ended questions fell in the universal categories, rather than the culturally-specific forms of autonomy or relatedness. One possibility is that providing descriptions of the culture-specific forms of those two constructs could be a cognitively demanding task for youth in response to the question "what about that situation that made you feel autonomous/close (or did not make you feel autonomous/close)". Chinese youth may have responded with universal level answers because they may find describing situations according to the overarching definitions of those

constructs to be a “safe” strategy. Nevertheless, it also is possible that youth might *really* consider those issues at a universal level, as the universal level thinking of autonomy and relatedness could be more fundamental than the culture-specific level. Further research is needed to differentiate these possibilities. For example, youth who provided a universal answer vs. those who provided a culture-specific one can be asked follow-up questions (e.g., brief individual interview) to explore why they answered that way.

Several contextually-sensitive descriptors were notable. For example, within universal autonomy, *sharing emotions/opinions* seemed to be salient in both peer and family contexts when youth reported feeling autonomous, whereas in school context, *sense of mastery or control* was relatively prevalent. This particular pattern may well reflect the fact that, in China, children’s academic success is given priority over other developmental domains and the school setting is highly competitive in nature. Thus, being competent could be the most salient aspect when youth imagined themselves in school but not in other contexts that elicited their sense of autonomy.

When describing what did not make youth feel close to others, *conflicts/disagreements* prevailed in the peer context whereas *being criticized or criticizing others* was prevalent in both families and schools. Finally, distinctiveness descriptors such as *showing openness to and respect for each other’s views* did not seem salient in forming and/or maintaining interpersonal closeness in the family context. Taken together, these findings suggest that both educational and family systems are highly hierarchical in China (e.g., Helwig et al., 2003; Triandis, 1989), compared to the peer context in which equal status among individuals is emphasized and conflicts/disagreements among peers are relatively more frequent.

However, the contextual specificity of culture-specific forms of autonomy and relatedness did not seem to occur in the scenarios measure. It is possible that the open-ended descriptors and scenarios that were designed to reflect the same constructs might have failed to do so, given that one method demonstrated contextual variations and the other did not. This speculation can be examined in follow-up studies by looking at the correlations between two different sets of scores (e.g., scenario vs. items) measuring a given construct, and high correlations would indicate the conceptual consistencies between scale items and scenarios.

The lack of sex differences in all forms of autonomy and relatedness, based on frequencies of descriptors and scenario scores, may have reflected the relatively equal access to modern experiences in the millennial generation boys and girls. An alternative explanation could be that the majority of the target generation is from only-child families and the differential parenting of boys vs. girls is less likely than in the past.

In summary, the current findings lend important support for my theoretical models. That is, Mainland Chinese children can produce diverse descriptors that capture both universal and culturally distinctive forms of autonomy and relatedness. Further, the relative prevalence of some descriptors demonstrated contextual variations. Scenarios designed to reflect culture-specific forms of autonomy and relatedness suggest their relevance to Chinese adolescents' sense of autonomy and relatedness. Unlike descriptors, the scenario scores showed moderate internal consistency across three social contexts. No sex differences were found in Chinese youth's endorsement of autonomy and relatedness categories.

In Study 1, one school was chosen from each of the urban and rural areas. One notable limitation of this study is that the pool of autonomy and relatedness descriptors might have been biased. For example, some descriptors may indeed be central to Chinese youth, but were not

found to be prevalent in the current sample. Thus, to better understand Mainland Chinese adolescents' conceptions of autonomy and relatedness, Study 2 (reported in Chapter 3) was conducted to refine the obtained descriptors, in terms of identifying the most relevant descriptors/statements of these two constructs, as well as filtering out those descriptors/statements that were not psychometrically sound.

References

- Allen, J. P., Hauser, S. T., Bell, K. L., & O'Connor, T. G. (1994). Longitudinal assessment of autonomy and relatedness in adolescent-family interactions as predictors of adolescent ego development and self-esteem, *Child Development*, 65(1), 179-194.
doi: 10.1111/j.1467-8624.1994.tb00743.x
- Amrden, G., & Greenberg, M. (1987). The inventory of parent and peer attachment: Individual differences and their relationship to psychological well-being in adolescence. *Journal of Youth and Adolescence*, 16, 427- 454.
- Asakawa, K., & Csikszentmihalyi, M. (2000). Feelings of connectedness and internalization of values in Asian American adolescents. *Journal of Youth and Adolescence*, 29, 121-145.
- Bakeman, R., & Gottman, J. M. (1997). *Observing interaction: An introduction to sequential analysis* (2nd ed.). Cambridge, UK: Cambridge University Press.
- Bao, X., & Lam, S. (2008). Who makes the choice? Rethinking the role of autonomy and relatedness in Chinese children's motivation. *Child Development*, 79(20), 269-283.
doi: 10.1111/j.1467-8624.2007.01125.x
- Barber, B. K., Xia, M., Olsen, J. A., McNeely, C. A., & Bose, K. (2012). Feeling disrespected by parents: Refining the measurement and understanding of psychological control. *Journal of Adolescence*, 35, 273-287.
- Belmont, M., Skinner, E., Wellborn, J. & Connell, J. (1992). *Teacher as social context: Student - report of measure of teacher provision of involvement, structure, and autonomy support*. Rochester, NY: University of Rochester Press.

- Brislin, R. W. (1980). Translation and content analysis of oral and written materials. In H. C. Triandis & J. W. Berry (Eds.), *Handbook of Cross-Cultural Psychology: Vol. 2. methodology* (pp. 389- 444). Boston, MA: Allyn and Bacon.
- Byrne, B. M. (2010). *Structural equation modeling with AMOS: Basic concepts, applications, and programming* (2nd ed.). New York: Taylor & Francis Group.
- Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin*, 56(2), 81-105.
- Chan, J. (2002). Moral autonomy, civil liberties, and Confucianism. *Philosophy East and West*, 52(3), 281-310.
- Chirkov, V. I., & Ryan, R. M. (2001). Parent and teacher autonomy support in Russian and U. S. adolescents: Common effects on well-being and academic motivation. *Journal of Cross-Cultural Psychology*, 32, 618-635.
- Chirkov, V., Ryan, R. M., Kim, Y., & Kaplan, U. (2003). Differentiating autonomy from individualism and independence: A self-determination theory perspective on internalization of cultural orientations and well-being. *Journal of Personality and Social Psychology*, 84(1), 97-110. doi: 10.1037/0022-3514.84.1.97
- Chirkow, V.I., Ryan, R. M., & Willness, C. (2005). Cultural context and psychological needs in Canada and Brazil: Testing and self-determination approach to the internalization of cultural practices, identity, and well-being. *Journal of Cross-Cultural Psychology*, 36, (4), 423-443.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum Press.

- Furr, R. M., & Bacharach, V. R. (2013). *Psychometrics: An introduction (2nd ed.)*. Thousand Oaks, CA: Sage.
- Furr, C., & Skinner, E. (2003). Sense of relatedness as a factor in children's academic engagement and performance. *Journal of Educational Psychology*, 95(1), 148-162.
- Helwig, C. C., Arnold, M. L., Tan, D., & Boyd, D. (2003). Chinese adolescents' reasoning about democratic and authority-based decision making in peer, family, and school contexts. *Child Development*, 74(3), 783-800. doi: 10.1111/1467-8624.00568
- Lahat, A., Helwig, C.C., Yang, S., Tan, D., & Liu, C. (2008). Mainland Chinese adolescents' judgments and reasoning about self-determination and nurturance rights. *Social Development*, 18(3), 690-710. doi: 10.1111/j.1467-9507.2008.00507.x
- Liu, M., Chen, X., Rubin, K., Zheng, S., Cui, L., Chen, H., & Wang, L. (2005). Autonomy- vs. connectedness-oriented parenting behaviors in Chinese and Canadian mothers. *International Journal of Behavioral Development*, 29(6), 489-495. doi: 10.1080/01650250500147063
- Qin, Li., Pomerantz, E. M., & Wang, Q. (2009). Are gains in decision- making autonomy during early adolescence beneficial for emotional functioning? The case of the United States and China. *Child Development*, 80(6), 1705-1721. doi: 10.1111/j.1467-8624.2009.01363.x
- Rohner, R. P. (1980). Worldwide tests of parental acceptance-rejection theory: An overview. *Behavioural Science Research*, 15, 1-21.
- Ryan, R.M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American psychologist*, 55, 68-78. doi: 10.1037/0003-066X.55.1.68

- Smetana, J. (2002). Culture, autonomy, and personal jurisdiction. In R. Kail & H. Reese (Eds.), *Advances in child development and behaviour* (Vol. 29., pp. 52-78). Amsterdam, the Netherlands: Academic Press.
- Tabachnick, B. G., & Fidel, L. S. (2001). *Using multivariate statistics (4th ed.)*. Needham Heights, MA: Allyn & Bacon.
- Trandis, H. C. (1989). The self and social behavior in differing cultural contexts. *Psychological Review*, 96, 506-520. doi: 10.1037/0033-295X.96.3.506
- Uchida, Y. (2012, July). *Did you notice how I helped you? Cultural differences in support monitoring*. Poster session presented at the International Society for the Study of Human Development Biennial Meeting, Edmonton.
- Walker, L. J., & Pitts, R. C. (1998). Naturalistic conceptions of moral maturity. *Developmental Psychology*, 34 (3), 403-419.
- Wang, Q., Pomerantz., E. M., & Chen, H. (2007). The role of parents' control in early adolescents' psychological functioning: A longitudinal investigation in the US and China. *Child Development*, 78(5), 1592-1610. doi: 10.1111/j.1467-8624.2007.01085.x
- Xu, Y., Farver, J. A., Yang, Y., & Zeng, Q. (2008). Chinese children's conceptions of shyness: A prototype approach. *Merrill-Palmer Quarterly*, 54(4), 515-544.
- Yang, K. (1981). The formation and change of Chinese personality: A cultural-ecological perspective. *Acta Psychologica Taiwanica*, 23, 39-56. (In Chinese).

Chapter 3: Study 2

Refinement of Autonomy and Relatedness Measures

In Study 1, descriptors derived from responses to open-ended questions provided valuable information about Chinese adolescents' conceptions of autonomy and relatedness. However, the centrality of those descriptors to Chinese youth in general remained unclear. Thus, a primary goal of Study 2 was to examine their centrality by formulating those descriptors into scale items and inspecting their means. Indeed, this prototypical approach has been used in exploring individuals' understanding of other psychological constructs, such as morality (Walker & Pitts, 1998) and shyness (Xu et al., 2008). According to this approach, scale items/statements based on the descriptors generated in Study 1 with high autonomy and relatedness ratings would be seen as characteristics of individuals who feel autonomous or have a sense of relatedness, respectively. In addition, to further refine the scale items, those that were shown to be conceptually ambiguous and/or had distribution problems were to be dropped.

The scenarios administered in Study 1 were re-rested for psychometric properties with a new sample in Study 2. Finally, in an effort to replicate the findings of Study 1, potential contextual variations and sex differences in the scale and scenario scores were explored.

Method

Participants

A second sample of 201 Grade 7 and 8 adolescents (97 boys; $M_{age} = 14.08$ yrs; $SD = 1.04$ yrs, ranging from 12 to 17 years) participated, recruited from two schools located in Tianjin, Mainland China. Ninety-five percent of the participants were of *Han* ethnicity. Among the parents who reported their education (84%), 80% of them had only finished Grade 12. In terms

of family structure, 93% of the children lived with both parents and 41% of the families had more than one child.

Procedure

A second ethical clearance (see Appendix D) for data collection was obtained from Brock University's Research Ethics Board, followed by permission from the participating school authorities. Questionnaires were group-administered to students in classrooms by the teachers. I was present and provided clarifications for the questionnaires, when appropriate. The questionnaire package took approximately 25 minutes to complete.

Measures

Autonomy and relatedness scales³ (see Appendix E). In Study 2, the autonomy and relatedness descriptors obtained from Study 1 were formulated into single items, which were then made into respective autonomy and relatedness scales. In both scales, no universal vs. culture-specific subscales were created.

In the autonomy scale section, 36 items (e.g., "I stand up for my actions while interacting with my friends"), including 12 in each of three social contexts (peer, family, school), were used to assess the likelihood that the participants *would* feel autonomous in the situation described in each item. Another 30 items (e.g., "I am forced to do something while interacting with my parents"), comprising 10 in each of three social contexts, measured the extent to which the participants *would not* feel autonomous in the situation described in each item. All items were rated on a 6-point scale, ranging from 0 (do not know) to 5 (very likely).

³ Eleven pilot participants responded to both the autonomy and relatedness scales and no changes were made to the measures.

Similar to the autonomy scale, each of 24 relatedness items (e.g., “my friends and I trust each other”) assessed the likelihood the participants *would* feel close/connected to people who are important to them in each situation, with eight items in each of three contexts. Twenty-seven items (e.g., “My teacher criticizes me a lot”) comprising nine items in each of three contexts, assessed the degree the participants *would not* feel close/connected to people who are important to them in each situation. Again, all responses were rated on a 6-point scale, ranging from 0 (do not know) to 5 (very likely).

Autonomy and relatedness scenarios. The six scenarios that were used to assess the two forms of autonomy (social and personal) and relatedness (accommodation and distinctiveness) in Study 1 were administered in Study 2 as well. Again, as described in Study 1, there were two scenarios for each of three social contexts (family, school, peer). One scenario was used to measure both social autonomy and accommodation and another to assess both personal autonomy and distinctiveness.

The order of the three social contexts for both scales and scenarios was counterbalanced. The autonomy and relatedness scales were translated into Chinese with a back-translation procedure (Brislin, 1980).

Results

To refine the scale items obtained, frequency analysis and descriptive statistics (means, SDs, distributions) were used to eliminate items that were conceptually ambiguous or psychometrically problematic. In addition, the psychometric properties of the autonomy and relatedness scales, as well as the scenario scores, were determined. Then, the internal consistency reliabilities of both scales and the scenario scores across the three social contexts were examined.

Finally, a series of one-way MANOVAs were conducted to examine potential sex differences in the autonomy and relatedness scales, as well as the scenario scores.

Autonomy and Relatedness Scale Items Refinement

For the autonomy scale (see Table 4), in the “would feel autonomous” section, one item was dropped due to distribution problems (skewness = -2.52; kurtosis = 6.54) alone, one item was dropped due to low mean alone, and four items were dropped due to both low means and too many “don’t know” answers.

“Low means” were defined as ratings that were lower than 2.5. This elimination criterion (e.g., Xu et al., 2008) was used to exclude items/statements may not be relevant to Chinese adolescents’ sense of autonomy. If more than 15% of the 201 participants were unsure of the meaning of a given item, that item was treated as ambiguous in the current study. This criterion was relatively conservative compared to that used in other studies (e.g., Xu et al., 2008).

In the “would not feel autonomous” section, the means of all of the negative items were lower than 3.0. To retain as many negative items as possible, 17 items (57%) (6 in the peer, 4 family, and 7 school contexts, respectively) whose means were lower than 2.0 were dropped.

As shown in Table 5, in the “would feel close/connected” section, the only item dropped was “my teacher and I confide in each other” because of its low mean score (mean was below 2.5). In the “would not feel close/connected” section, means of all of the items were lower than 2.5. Again, similar to the selection criterion for negative autonomy items, 20 items (74%) (7 in the peer, 5 family, and 8 school contexts, respectively) were dropped, with means below 2.0.

The Remaining Autonomy and Relatedness Items Scores

Means, distributions, internal consistency reliabilities. As indicated in Table 6, the means of the positive autonomy items ranged from 2.53 to 4.29 and the negative items ranged

Table 4

All retained and eliminated autonomy items in Study 2

Original items	Reasons for elimination
“Would feel autonomous”	
I stand up for my actions while interacting with friends	
I have a sense of mastery/control while interacting with friends	
I can make a difference or have an influence on an event while interacting with friends	
■ I help my friends	Distribution problems
I try hard to succeed or excel in something while interacting with friends	
I have freedom of choice while interacting with friends	
I share things with my friends	
I share emotions/opinions with my friends	
I take initiative or am a leader while interacting with friends	
I get what I want/need while interacting with friends	
I am independent while interacting with friends	
I act on my friends’ reasonable expectations on me	
I stand up for my actions while interacting with my parents	
I can have a sense of mastery/control while interacting with my parents	
I can make a difference or have an influence on an event while interacting with my parents	
I help my parents	
I try hard to succeed or excel in something while interacting with my parents	
I have freedom of choice while interacting with my parents	
I share things with my parents	
I share emotions/opinions with my parents	
■ I take an initiative or being a leader while interacting with my parents	Low mean alone
I get what I want/need while interacting with my parents	
I am independent while interacting with my parents	
I act on my parents’ reasonable expectations on me	
I stand up for my actions while interacting with my teacher	
■ I can have a sense of mastery/control while interacting with my teacher	Both low mean and too many “don’t know” answers
■ I can make a difference or have an influence on an event while interacting with my teacher	Both low mean and too many “don’t know” answers
I help my teacher	
I try hard to succeed or excel in something while interacting with my teacher	
I have freedom of choice while interacting with my teacher	
I share things with my teacher	
I share emotions/opinions with my teacher	
■ I take an initiative or being a leader while interacting with my teacher	Both low mean and too many “don’t know” answers
■ I get what I want/need while interacting with my teacher	Both low mean and too many “don’t know” answers
I am independent while interacting with my teacher	
I act on my teacher’s reasonable expectations on me	
“Would not feel autonomous”	
I am forced to do something while interacting with friends	
I couldn’t get what I want/need while interacting with friends	

*I did not stand up for my actions while interacting with friends	Low mean alone
I am dependent on my friends, especially for support or help	
I did not meet my friends' expectations of me	
*My personal rights are violated while interacting with friends	Low mean alone
*I feel incompetent while interacting with friends	Low mean alone
*I did not help friends	Low mean alone
*I wouldn't accept what my best friend propose	Low mean alone
*I was not able to make my own decisions while interacting with friends	Low mean alone
I am forced to do something while interacting with my parents	
I couldn't get what I want/need while interacting with my parents	
*I did not or was not able to stand up for my actions while interacting with my parents	Low mean alone
I am dependent on my parents, especially for support or help	
I did not meet my parents' expectations on me	
My personal rights are violated while interacting with parents	
*I feel incompetent in myself while interacting with parents	Low mean alone
*I did not or was not able to help my parents	Low mean alone
*I would accept what my parents propose	Low mean alone
I was not able to make my own decisions while interacting with parents	
I am forced to do something while interacting with my teacher	
I couldn't get what I want/need while interacting with the teacher	
*I did not or was not able to stand up for my actions while interacting with my teacher	Low mean alone
*I am dependent on my teacher, especially for support or help	Low mean alone
I did not meet my teacher's expectations on me	
*My personal rights are violated while interacting with my teacher	Low mean alone
*I feel incompetent in myself while interacting with my teacher	Low mean alone
*I did not or was not able to help my teacher	Low mean alone
*I would accept what my teacher proposes	Low mean alone
*I was not able to make my own decisions while interacting with my teacher	Low mean alone

* Items that were eliminated

Table 5

All retained and eliminated relatedness items in Study 2

Original items	Reasons for elimination
“Would feel close/connected”	
My friends and I always adjust to each other	
My friends and I are attentive to each other’s thoughts and feelings	
My friends are people to whom I feel close	
My friends and I are caring and warm to each other	
My friends and I trust each other	
My friends and I are open to and respect each other’s views	
My friends and I always have some fun together	
My friends and I confide in each other	
My parents and I always adjust ourselves to the other	
My parents and I are attentive to each other’s thoughts and feelings	
My parents are people to whom I should feel close	
My parents and I are caring and warm to each other	
My parents and I trust each other	
My parents and I are open to and respect for each other’s views	
My parents and I always have some fun together	
My parents and I confide in each other	
My teacher and I always adjust ourselves to the other	
My teacher and I are attentive to each other’s thoughts and feelings	
My teacher is someone to whom I should feel close	
My teacher and I are caring and warm to each other	
My teacher and I trust each other	
My teacher and I are open to and respect for each other’s views	
My teacher and I always have some fun together	
* My teacher and I confide in each other	Low mean alone
“Would not feel close/connected”	
* My friends and I are not open to and respect for each other’s views	Low mean alone
* My friends criticize me a lot	Low mean alone
* My friends and I do not trust each other	Low mean alone
* My friends and I are not caring and warm to each other	Low mean alone
* My friends and I are not attentive to each other’s thoughts and feelings	Low mean alone
My friends and I have conflicts or disagreements	
* Sometimes, I was socially excluded by friends	Low mean alone
* Self-assertion is valued by both my friends and I	Low mean alone
My friends keep some secret from me	
My parents and I are not open to and respect for each other’s views	
My parents criticize me a lot	
* My parents and I do not trust each other	Low mean alone
* My parents and I are not caring and warm to each other	Low mean alone
* My parents and I are not attentive to each other’s thoughts and feelings	Low mean alone
My parents and I have conflicts or disagreements	

☒ Sometimes, I was socially excluded by parents	Low mean alone
☒ Self-assertion is valued by both my parents and I	Low mean alone
My parents keep some secret from me	
☒ My teacher and I are not open to and respect for each other's views	Low mean alone
My teacher criticizes me a lot	
☒ My teacher and I do not trust each other	Low mean alone
☒ My teacher and I are not caring and warm to each other	Low mean alone
☒ My teacher and I are not attentive to each other's thoughts and feelings	Low mean alone
☒ My teacher and I have conflicts or disagreements	Low mean alone
☒ Sometimes, I was socially excluded by the teacher	Low mean alone
☒ Self-assertion is valued by both my teacher and I	Low mean alone
☒ My teacher keeps some secret from me	Low mean alone

☒ Items that were eliminated

Table 6

Psychometric qualities of the remaining autonomy items in Study 2

	Cronbach's Alpha (α)	N	Mean	SD	Skewness (SE)	Kurtosis(SE)
Items in “would feel autonomous” situations						
I stand up for my actions while interacting with friends	.73(universal autonomy)	201	4.29	1.03	-1.57(.17)	2.95(.34)
I have a sense of mastery/control while interacting with friends		201	3.25	1.61	-.68(.17)	-.40(.34)
I can make a difference or have an influence on an event while interacting with friends		196	3.08	1.60	-.58(.17)	-.48(.35)
I share emotions/opinions with my friends		199	4.16	1.24	-1.53(.17)	1.98(.34)
I am independent while interacting with friends		199	2.94	1.61	-.20(.17)	-1.09(.34)
I stand up for my actions while interacting with my parents		201	3.69	1.39	-.95(.17)	.47(.34)
I can have a sense of mastery/control while interacting with my parents		200	3.17	1.60	-.55(.17)	-.57(.34)
I can make a difference or have an influence on an event while interacting with my parents		201	2.75	1.66	-.29(.17)	-.95(.34)
I share emotions/opinions with my parents		200	3.22	1.64	-.43(.17)	-1.02(.34)
I am independent while interacting with my parents		201	2.83	1.58	-.16(.17)	-.99(.34)
I stand up for my actions while interacting with my teacher		200	3.56	1.49	-.78(.17)	-.23(.34)
I share emotions/opinions with my teacher		199	2.86	1.65	-.25(.17)	-1.08(.34)
I am independent while interacting with my teacher		198	2.67	1.72	-.13(.17)	-1.18(.34)
I try hard to succeed or excel in something while interacting with friends	.69(personal autonomy)	201	3.45	1.50	-.87(.17)	.20(.34)
I have freedom of choice while interacting with friends		201	3.97	1.40	-1.30(.17)	.97(.34)
I take initiative or am a leader while interacting with friends		200	3.23	1.40	-.61(.17)	-.05(.34)
I get what I want/need while interacting with friends		200	3.06	1.51	-.60(.17)	-.28(.34)
I try hard to succeed or excel in something while interacting with my parents		201	3.02	1.58	-.47(.17)	-.62(.34)
I have freedom of choice while interacting with my parents		198	3.38	1.68	-.67(.17)	-.78(.34)
I get what I want/need while interacting with my parents		199	3.22	1.37	-.48(.17)	-.11(.34)
I try hard to succeed or excel in something while interacting with my teacher		200	2.53	1.69	-.13(.17)	-1.09(.34)
I have freedom of choice while interacting with my teacher		201	2.85	1.68	-.28(.17)	-1.08(.34)

I share things with my friends	.66(social autonomy)	201	4.28	1.10	-1.61(.17)	2.60(.34)
I act on my friends' reasonable expectations on me		199	2.83	1.61	-.33(.17)	-.84(.34)
I help my parents		194	4.28	1.20	-1.76(.18)	2.63(.35)
I share things with my parents		200	3.82	1.43	-1.03(.17)	.09(.34)
I act on my parents' reasonable expectations on me		197	3.32	1.55	-.71(.17)	-.34(.35)
I help my teacher		198	3.82	1.47	-1.20(.17)	.74(.34)
I share things with my teacher		200	2.76	1.66	-.18(.17)	-1.11(.34)
I act on my teacher's reasonable expectations on me		191	3.66	1.65	-1.09(.18)	.05(.35)
Items in "would not feel autonomous" situations						
I am forced to do something while interacting with friends		201	2.00	1.44	.77(.17)	-.37(.34)
I am dependent on my friends, especially for support or help		201	2.24	1.43	.46(.17)	-.73(.34)
I am forced to do something while interacting with my parents		200	2.69	1.57	.02(.17)	-1.08(.34)
I am dependent on my parents, especially for support or help		195	2.32	1.47	.33(.17)	-.70(.34)
I am forced to do something while interacting with my teacher		200	2.18	1.60	.42(.17)	-.95(.34)
I couldn't get what I want/need while interacting with friends		200	2.06	1.39	.38(.17)	-.60(.34)
I couldn't get what I want/need while interacting with my parents		199	2.31	1.40	.37(.17)	-.74(.34)
My personal rights are violated while interacting with parents		201	2.06	1.49	.72(.17)	-.64(.34)
I was not able to make my own decisions while interacting with parents		201	2.02	1.43	.67(.17)	-.56(.34)
I couldn't get what I want/need while interacting with the teacher		200	2.14	1.48	.36(.17)	-.74(.34)
I did not meet my friends' expectations of me		200	2.05	1.39	.27(.17)	-.61(.34)
I did not meet my parents' expectations on me		201	2.86	1.41	-.20(.17)	-.47(.34)
I did not meet my teacher's expectations on me		200	2.64	1.48	-.14(.17)	-.65(.34)

Note. The range of the autonomy scale vales was 0-5.

from 2.00 to 2.86. All items were normally distributed. Based on positive items, the three forms of autonomy scale scores showed moderate consistencies across three contexts (α s ranged from .67 to .73).

Table 7 presents the psychometric properties of the remaining items within each of relatedness categories. The means of the positive relatedness items ranged from 2.94 to 4.18 and the negative items ranged from 2.01 to 2.45. All items were normally distributed. Again, based on positive items, the three forms of relatedness scale scores were consistent across three contexts (α s ranged from .76 to .82).

The positive vs. negative scale items. Some items that presumably would *not* make the participants feel autonomous and those that presumably would *not* make the participants feel close were kept, although their means were relatively low. Additional exploratory factor analysis (EFA) using oblique (promax) rotation revealed that the remaining negative and positive autonomy items loaded on two different factors and the negative factor correlations were low (r s ranged from -.31 to -.41 across peer, family, and school contexts).

For relatedness items, the one factor solution showed that in the peer context, only one of the two retained negative items (“My friends keep some secret from me”) loaded negatively on the same factor as the positive items. In the family context, three of the four remaining negative items (“My parents and I are not open to and respect for each other’s views”, “My parents criticize me a lot”, “My parents and I have conflicts or disagreements”) loaded negatively on the same factor as the positive items. In the school context, the only remaining negative item (“My teacher criticizes me a lot”) did not load on the same factor as the positive ones.

Taken together, these findings suggested that all of the remaining negative autonomy items and some of the remaining negative relatedness items might not only be irrelevant to

Table 7

Psychometric qualities of the remaining relatedness items in Study 2

	Cronbach's Alpha (α)	N	Mean	SD	Skewness(SE)	Kurtosis(SE)
Items in “would feel close/connected” situations						
My friends and I are caring and warm to each other	.76(universal relatedness)	201	3.89	1.39	-1.27(.17)	.97(.34)
My friends and I always have some fun together		201	4.18	1.38	-1.66(.17)	1.80(.34)
My friends and I confide in each other		201	3.76	1.58	-1.00(.17)	-.24(.34)
My parents and I are caring and warm to each other		200	3.95	1.37	-1.18(.17)	.71(.34)
My parents and I always have some fun together		200	3.52	1.57	-.75(.17)	-.47(.34)
My parents and I confide in each other		199	2.94	1.65	-.21(.17)	-1.12(.34)
My teacher and I are caring and warm to each other		199	3.26	1.56	-.52(.17)	-.60(.34)
My teacher and I always have some fun together		200	2.97	1.68	-.32(.17)	-1.02(.34)
My friends and I always adjust to each other	.83(accommodation)	201	3.97	1.38	-1.27(.17)	.86(.34)
My friends and I are attentive to each other's thoughts and feelings		200	4.04	1.28	-1.31(.17)	1.23(.34)
My friends are people to whom I feel close		201	3.95	1.39	-1.28(.17)	.89(.34)
My parents and I always adjust ourselves to the other		201	3.60	1.45	-.74(.17)	-.26(.34)
My parents and I are attentive to each other's thoughts and feelings		201	3.43	1.50	-.65(.17)	-.38(.34)
My parents are people to whom I should feel close		201	4.15	1.27	-1.42(.17)	1.28(.34)
My teacher and I always adjust ourselves to the other		200	3.24	1.47	-.61(.17)	-.16(.34)
My teacher and I are attentive to each other's thoughts and feelings		200	3.07	1.59	-.47(.17)	-.67(.34)
My teacher is someone to whom I should feel close		199	3.28	1.53	-.53(.17)	-.65(.34)
My friends and I trust each other	.77(distinctiveness)	201	3.96	1.42	-1.28(.17)	.80(.34)
My friends and I are open to and respect each other's views		201	3.91	1.44	-1.28(.17)	.80(.34)
My parents and I trust each other		200	3.80	1.47	-1.06(.17)	.22(.34)
My parents and I are open to and respect for each other's views		200	3.67	1.43	-.80(.17)	-.20(.34)
My teacher and I trust each other		200	3.56	1.50	-.89(.17)	-.01(.34)
My teacher and I are open to and respect for each other's views		200	3.39	1.58	-.72(.17)	-.46(.34)

Items in “would not feel close/connected” situations					
My friends and I have conflicts or disagreements	120	2.22	1.34	.45(.22)	-.53(.44)
My friends keep some secret from me	197	2.04	1.53	.57(.17)	-.70(.35)
My parents and I are not open to and respect for each other’s views	194	2.02	1.38	.65(.17)	-.49(.35)
My parents criticize me a lot	200	2.45	1.47	.34(.17)	-.85(.34)
My parents and I have conflicts or disagreements	199	2.39	1.41	.45(.17)	-.85(.34)
My parents keep some secret from me	200	2.01	1.51	.57(.17)	-.63(.34)
My teacher criticizes me a lot	200	2.08	1.36	.62(.17)	-.36(.34)

Note. The range of the relatedness scale vales was 0-5.

Chinese youth's sense of not feeling autonomous or connected, but the negative items *per se* may not be the conceptual opposites of the positive items.

Sex differences in scale scores. Based on positive items, six sets of one-way MANOVAs were conducted to explore potential sex differences in autonomy (universal, social autonomy, personal autonomy) and relatedness (universal, accommodation vs. distinctiveness) scale scores across three contexts. No significant effects were found.

Autonomy and Relatedness Scenario Scores

Means, distributions, internal consistency reliabilities of two forms of autonomy and relatedness. Scenario scores in Study 2 were similar to those in Study 1 (see Table 8). The means of two forms of autonomy and relatedness scenario scores ranged from 2.65 to 3.44. Also, those scores were normally distributed. The α s ranged from .63 to .69, suggesting that the scenarios scores were moderately consistent across the three social contexts.

First-order correlations among scenario scores. Consistent with Study 1, within each of the three social contexts, social autonomy and accommodation were moderately correlated, whereas the correlations between personal autonomy and distinctiveness were very low (see Table 9).

Sex differences in scenario scores. As in Study 1, four sets of one-way MANOVAs were conducted to explore potential sex differences in Chinese adolescents' scenario scores on two forms of autonomy (social autonomy vs. personal autonomy) and relatedness (accommodation vs. distinctiveness). Again, no significant sex effects emerged.

Discussion

In Study 2, psychometric test refinement analyses of the autonomy and relatedness scale items were conducted. As indicated by their mean scores, the remaining items are considered to be central to Chinese

Table 8

Psychometric qualities of autonomy and relatedness scenario scores in Study 2

	N	Mean	SD	Skewness (SE)	Kurtosis(SE)	Cronbach's Alpha (α)
Social autonomy (peer context)	180	2.65	1.09	-.03(.18)	.24(.36)	.69
Social autonomy (family context)	179	2.78	1.29	.24(.18)	-.69(.36)	
Social autonomy (school context)	181	2.76	1.22	.16(.18)	-.54(.36)	
Personal autonomy (peer context)	183	3.37	1.15	-.17(.18)	-.32(.36)	.65
Personal autonomy (family context)	181	3.33	1.31	-.21(.18)	-.80(.36)	
Personal autonomy (school context)	181	3.44	1.15	-.04(.18)	-.57(.36)	
Accommodation (peer context)	173	3.03	1.27	.04(.19)	-.65(.36)	.69
Accommodation (family context)	180	3.00	1.38	.09(.18)	-1.01(.36)	
Accommodation (school context)	169	2.95	1.35	.19(.19)	-.95(.37)	
Distinctiveness (peer context)	176	2.99	1.32	.10(.18)	-.83(.36)	.63
Distinctiveness (family context)	173	3.09	1.27	.05(.19)	-.72(.37)	
Distinctiveness (school context)	181	3.44	1.15	-.04(.19)	-.57(.37)	

Note. The autonomy and relatedness scenario scales ranged from 1 to 5.

Table 9

First-order correlations among Study 2 scenario scores

	1	2	3	4	5	6	7	8	9	10	11	12
1. Peer context social autonomy	--	.47**										
2. Peer context accommodation		--										
3. Peer context personal autonomy			--	.19*								
4. Peer context distinctiveness				--								
5. Family context social autonomy					--	.43**						
6. Family context accommodation						--						
7. Family context personal autonomy							--	.08				
8. Family context distinctiveness								--				
9. School context social autonomy									--	.30**		
10. School context accommodation										--		
11. School context personal autonomy											--	.22**
12. School context distinctiveness												--

* $p < .05$. ** $p < .01$.

N = 169-183

adolescents' sense of autonomy and relatedness and thus comprise a valid and useful measure of these constructs.

However, it is possible that some of the low mean items eliminated might be conceptually more relevant in a Western culture than they are in Chinese culture. To elaborate on this, the dropped positive items are listed here: *I take an initiative or being a leader while interacting with my parents, I have a sense of mastery/control while interacting with my teacher, I can make a difference or have an influence on an event while interacting with my teacher, I take an initiative or being a leader while interacting with my teacher, I get what I want/need while interacting with my teacher, and my teacher and I confide in each other.*

If we look more closely at those items, most of the autonomy items dropped seemed to capture the concept of “social competence” more than “autonomy”. *Social competence* is defined as effectiveness in social interaction and this construct can be approached from different levels, such as theoretical, index, and social skills (e.g., Rose-Krasnor, 1997). The term *autonomy* concerns an intentional act to achieve self-regulation (e.g., Trommsdorff, 2012). Further, this conceptual distinction may be validated by testing those dropped “autonomy” items against existing *social competence* measures to see how conceptually similar or different these two sets of measures would be.

Across cultures, school seems to be a context in which adolescents likely encounter psychosocial borders that would prevent them from establishing relationships with teachers. For example, American high school students were found to make transitions between their “worlds” (peer, family, school) without direct support, especially from school teachers (Phelan, Davidson, & Cao, 1991). Further, Chinese students perceived the teacher-student relationship to have a greater power differential than did their British counterparts (Spencer-Oatey, 1997). Thus, “my

teacher and I confide in each other” may not be relevant to Chinese youth when they imagine themselves in school and have more difficulty considering themselves close to a teacher than would a Western peer. Again, this statement of relatedness should be examined in Western youth in future research.

Autonomy and relatedness categories based on scale scores in the current study did not seem to display contextual variation, which was inconsistent with the findings of Study 1. This inconsistency may have something to do with the format of the measurement in the two studies. In Study 1, the context specificity of autonomy and relatedness descriptors was calculated from those that were spontaneously generated across three contexts, not the ones that were relevant only in certain contexts (e.g., independence emerged only in the family context). In Study 2, participants were presented with identical scale items across three contexts, within a given autonomy/relatedness category, which may be more likely to reflect a true context effect. Alternatively, the discrepancies between Study 1 and Study 2 findings may reflect differences in the two samples.

In summary, psychometric test refinement analyses conducted in the current study resulted in autonomy and relatedness items that are conceptually clear, psychometrically sound, and salient to Chinese youth’s sense of autonomy and relatedness. Also, the Study 1 findings regarding autonomy and relatedness scenarios and potential sex effects on autonomy and relatedness scores were replicated in Study 2. Finally, autonomy and relatedness scale scores demonstrated consistencies across three social contexts, although this differed from the Study 1 findings. In light of this, the autonomy and relatedness measures developed in the two studies provide bases for subsequent empirical validation of the two-level models.

References

- Brislin, R. W. (1980). Translation and content analysis of oral and written materials. In H. C. Triandis & J. W. Berry (Eds.), *Handbook of Cross-Cultural Psychology: Vol. 2. methodology* (pp. 389- 444). Boston, MA: Allyn and Bacon.
- Phelan, P., Davidson, A. L., & Cao, H. T. (1991). Students' multiple worlds: Negotiating the boundaries of family, peer, and school cultures. *Anthropology & Education Quarterly*, 22(3), 224-250. doi: 10.1525/aeq.1991.22.3.05x1051k
- Rose-Krasnor, L. (1997). The nature of social competence: A theoretical review. *Social Development*, 6(1), 111-135. doi: 10.1111/j.1467-9507.1997.tb00097.x
- Spencer-Oatey, H. (1997). A comparative study of tutor-student role relations in Britain and China. *Cross-Cultural Psychology*, 28(3), 284-302. doi: 10.1177/0022022197283005
- Trommsdorff, G. (2012). Development of “agentic” regulation in cultural context: The role of self and world views. *Child Development Perspectives*, 6(1), 19-26. doi: 10.1111/j.1750-8606.2011.00224.x
- Walker, L. J., & Pitts, R. C. (1998). Naturalistic conceptions of moral maturity. *Developmental Psychology*, 34 (3), 403-419.
- Xu, Y., Farver, J. A., Yang, Y., & Zeng, Q. (2008). Chinese children's conceptions of shyness: A prototype approach. *Merrill-Palmer Quarterly*, 54(4), 515-544.

Chapter 4: Study 3

Testing the Two-Level (Universal vs. Culture-Specific) Models of Autonomy and Relatedness in Mainland Chinese Adolescents

The main goal of Study 3 was to test empirically the proposed two-level (*universal* and *culture-specific*) models for both autonomy and relatedness, based on the measures derived from Study 1 and Study 2. The core of this endeavor was to investigate the construct validity of these two-level models. Indeed, as proposed in Cronbach and Meehl's (1955) classic paper on psychological test validity, construct validity should always be of central importance. In addition, although there is no single, definite test of construct validity (e.g., Kline, 2005), confirmatory factor analysis (CFA) has been a valuable tool and common practice in construct validation, in which both convergent and discriminant validity can be evaluated.

To test the two-level models of autonomy and relatedness, several key steps were taken in Study 3. First, the scale items that tapped universal, as well as culture-specific forms of autonomy and relatedness, were selected and finalized through conceptual analysis on those items. Second, to evaluate the convergent and discriminant validity of the two culture-specific forms of autonomy and relatedness, as well as the two-level (universal vs. culture-specific) models for both constructs, a series of confirmatory factor analysis (CFA) measurement models were specified and tested. The combination of conceptual analysis on scale items with CFA is seen as appropriate in testing conceptual models (e.g., Noon, Dekovic, & Meeus, 2001). This strategy can help get around the drawbacks of specifying a CFA model based on results of an exploratory factor analysis (EFA) in that the CFA may increase the chance covariances of EFA (Kline, 2005) and that relatively low loadings in EFA often account for a large amount of variance in CFA (van Prooijen, & van der Kloot, 2001).

Third, the culture-specific forms of autonomy and relatedness were tested separately within the framework of multitrait-multimethod (MTMM). The current data comprised two methods (scale and scenario) and two constructs (social autonomy vs. personal autonomy and accommodation vs. distinctiveness, respectively). Following from the logic of MTMM described by Campbell and Fiske (1959), convergent validity of a given construct would be evidenced if the factor loadings based on both scale and scenario scores were relatively high. Moderate correlations between the two forms of autonomy (social vs. personal) and relatedness (accommodation vs. distinctiveness) measured by scales and scenarios would suggest discriminant validity. The method effects of scales vs. scenarios were evaluated by the extent to which the variances of different constructs were accounted for by the same method.

Finally, I explored a potential additional support for the construct validity of autonomy and relatedness by relating culture-specific forms of autonomy and relatedness to achievement motivation orientations (social-oriented vs. individual-oriented), based on both scale and scenario scores.

In the motivation literature, the achievement motive is considered to be universally significant. Also, research guided by SDT has revealed that autonomy is associated with individuals' enhanced achievement motivation (e.g., Bao & Lam, 2008; Ryan & Deci, 2000). Across cultures, children's sense of relatedness has been found to be positively predictive of their academic motivation (e.g., Eccles & Midgley, 1989; Furrer & Skinner, 2003; Hui, Sun, Chow, & Chu, 2011).

Further, Yang and colleagues (Yang, 1982b; Yang & Liang, 1973; Yang & Yu, 1989) distinguished two orientations of achievement motivation: social and individual. Social-oriented achievement motivation (SOAM) emphasizes that achievement goals and evaluation criteria are

defined mainly by significant others, groups, or society. In contrast, the individual-oriented achievement motivation (IOAM) implies that the achievement goals and evaluations of performance are mostly of personal jurisdiction. Individual-oriented motivation is seen as resulting mainly from socialization in individualistic society and social-oriented motivation from collectivistic society (Yang, 1986). Further, empirical findings support the conceptual distinctions between SOAM and IOAM (e.g., Chu, 1989; Yu, 1996; Yu & Yang, 1989). As social changes towards modernization (or Westernization) continue, both SOAM and IOAM are believed to be present in Chinese society, especially in Mainland China (e.g., Yu, 1996).

Markus and Kitayama claimed, in their influential 1991 article, that motivational processes implicate the concept of *self* and that individuals with an interdependent self may experience more of social-oriented motivation whereas individual-oriented motivation may have salience for those with an independent self. Embedded in the frameworks of the interdependent self vs. independent self, in Study 3, social autonomy scores were expected to be strongly and positively associated with SOAM scores whereas personal autonomy would be positively predictive of IOAM. Similarly, ratings of accommodation were hypothesized to be positively associated with SOAM and ratings of distinctiveness positively correlated with IOAM.

In addition to testing the two-level models of autonomy and relatedness, potential context and sex differences in two culture-specific forms of both constructs were examined.

Method

Participants

A third sample of 465 Mainland Chinese Grade 7 and 8 adolescents (222 boys; $M_{\text{age}} = 14.09\text{yrs}$; $SD = .78$, ranging from 12 to 17 years) was recruited, from three schools located in Tianjin ($N = 235$) and one school from Hebei ($N = 232$). The two samples were balanced in

terms of participant number⁴ ($\chi^2_{(1)} = .37, p > .05$) and gender ($\chi^2_{(1)} = .01, p > .05$), but not for grade ($\chi^2_{(1)} = 9.34, p < .001$). The urban sample was made up of approximately equal numbers of grade 7 and 8 students, whereas there were more 8th graders than 7th graders in the rural sample.

Ninety-three participants identified themselves as having *Han* ethnicity. Only 21% of the parents reported that they received at least a college education. Fifty-six of the participants were from only-child families; a vast majority (94%) of the children lived with married parents.

Procedure

Following the second ethical clearance for data collection obtained from Brock University's Research Ethics Board and permission from the participating school authorities, questionnaires were group-administered to students in classrooms by their teachers. There was a questionnaire administration training session for the teachers. The questionnaire took students approximately 30 minutes to complete.

Measures

Autonomy and relatedness scales. The remaining 78 autonomy and relatedness scale items from Study 2 were included in Study 3. The autonomy scale included 45 items (15 for the peer, 17 family, and 13 school contexts). In the relatedness scale, there were 32 items (12 for the peer, 12 family, and 8 school contexts). Responses to all of the autonomy and relatedness items were rated on a 6-point scale, ranging from 0 (do not know) to 5 (very likely).

⁴ No significant differences between urban and rural youth in their endorsement of various forms of autonomy and relatedness were found, based on both scale and scenarios scores, and the geographical variable was not further analyzed.

Autonomy and relatedness scenarios. The six autonomy and relatedness scenarios that were used in Studies 1 and 2 were included in the questionnaire package in Study 3.

Achievement motivation orientations. This construct was measured using the Social-Oriented (SOAM) and Individual-Oriented (IOAM) Achievement Motivation Scale (Yu & Yang, 1989) (see Appendix F). This scale was originally developed in Chinese. The SOAM and IOAM are each 30-item subscales (α s = .90 and .87 for SOAM and IOAM, respectively). One example of the SOAM items is “Whether I am doing well or not normally is decided by my parents or the teacher”. One example of an IOAM item is “I will try my best to do something meaningful from my perspective, no matter how other people perceive it”. Responses to each item were rated on a 6-point scale, ranging from 1 (completely disagree) to 6 (completely agree).

Results

The overall goal of Study 3 was to test the two-level model for both autonomy and relatedness. First, conceptual analysis was conducted to finalize the scale items that tapped universal, as well as culture-specific forms of autonomy and relatedness. Second, data on autonomy, relatedness, and achievement motivation orientations variables were screened using descriptive statistics and missing data analyses. Third, to evaluate the construct validity of the two culture-specific forms of autonomy and relatedness and the two-level models, I specified and tested a series of confirmatory factor analysis (CFA) measurement models. Fourth, multitrait-multimethod (MTMM) autonomy and relatedness models were specified and tested to evaluate potential method effects of scale and scenarios. Finally, structural models were assessed to assess the associations between culture-specific forms of autonomy and relatedness and achievement motivation orientations.

In addition, a series of one-way MANOVAs were conducted on both scale and scenario scores to explore potential sex differences in Chinese adolescents' endorsement of two forms of autonomy and relatedness.

Selection of Autonomy and Relatedness Items

Consistent with Study 2, EFA revealed that positive autonomy items (e.g., "I am independent while interacting with friends") and negative autonomy items (e.g., "My personal rights are violated while interacting with my parents") loaded on two different factors. The factor correlations were negative in valence but low in magnitude (r s ranged from $-.14$ to $-.30$ across peer, family, and school contexts). In addition, the mean scores of those "negative" items were all relatively low (i.e., lower than the mid-point of the 6-point rating scales).

Similar to the analyses related to autonomy items, the positive and negative relatedness items loaded on two distinct factors in both peer and family contexts (r s = $-.31$ and $-.39$, respectively) and the mean scores of those "negative" items were all lower than 2.8. The school context was an exception. The positive and negative factors did not emerge. The only negative item "My teacher criticizes me a lot" loaded negatively on one of two factors that included positive items. Also, the two factors were not interpretable.

Again, the findings indicate that those negative items that elicited situations that would not make participants feel autonomous and close may not actually be the conceptual opposites of the positive items, which asked participants to describe situations that would make them feel autonomous and close. If these two types of situations were indeed conceptually opposites, they would be expected to show strong negative correlations. Thus, all the negative autonomy and relatedness items were dropped from subsequent analyses.

After the EFAs, a total of 11 additional positive autonomy and relatedness items were dropped in order to have identical items across three social contexts. The dropped items were as follows: *I have a sense of mastery/control while interacting with my friends, I can make a difference or have an influence on an event while interacting with my friends, I take initiative or am a leader while interacting with my friends, I get what I need/want while interacting with my friends, I have a sense of mastery/control while interacting with parents, , I can make a difference or have an influence on an event while interacting with my parent, I help my parents, I get what I need/want while interacting with my parents, and I help my teacher, My friends and I confided in each other, and My parents and I confide in each other.*

As reported in Study 1, the descriptors from which the existing items were derived were categorized, according to the conceptual frameworks of autonomy (universal, personal autonomy and social autonomy) and relatedness (universal relatedness, distinctiveness, accommodation). Very good inter-rater agreement on the autonomy and relatedness categories was reached in Study 1 ($k = .91$) between a native Chinese speaker and myself. However, changes were made to the categorization of two selected items, after more experience with the children's responses and discussion with my thesis committee. The changes are described below.

The categorization of the item *I am independent while interacting with my friends/parents/ teacher* was changed from universal autonomy to personal autonomy. Indeed, free expression, which can fit into the framework of personal autonomy, is seen as an essential element of independence (e.g., Chan, 2002; Hollander, 1975). Another item, *my friends/parents/teacher are those to whom I should feel close* was changed from the accommodation category to universal relatedness (see Appendix G) for the final sets of autonomy and relatedness items).

Descriptive Statistics and Missing Data

Composite mean scores on personal autonomy, social autonomy, accommodation, and distinctiveness in the three social contexts were computed separately, based on the categorizations of the items described above. As shown in Table 10, scores on autonomy and relatedness scales, scenarios, and achievement motivation orientations were all normally distributed. Also, both the autonomy and relatedness scale scores across three social contexts were moderately consistent.

Again, Study 3 confirmed the findings of Studies 1 and 2, in terms of the moderately high correlations between social autonomy and accommodation scenario scores and the relatively low correlations between personal autonomy and distinctiveness scenario scores within each domain (see Table 11).

Standard maximum likelihood (ML) estimation assumes no missing data (e.g., Kline, 2005). Further, both the full information maximum likelihood (FIML) estimation and expectation-maximization (EM) estimation, which are the two dominant model-based data imputation approaches, require that the data are missing at random (e.g., Shafer & Granham, 2002). Thus, a frequency analysis was run to determine the percentage of missing data in the current study. Overall, 2.13% of the data was missing. Then, missing data analysis was conducted and *t* tests suggested that the missingness of variables concerned was random (MAR). Finally, the expectation-maximization (EM) estimation was used for data imputation before the SEM analyses.

Measurement Model Testing

Autonomy measurement models.

Table 10

Psychometric qualities of Study 3 measures

Autonomy and relatedness scales	N	Mean	SD	Skewness (SE)	Kurtosis (SE)	Cronbach's Alpha (α)
Social autonomy (peer context)	458	3.74	.87	-.47(.11)	-.03(.23)	.60
Social autonomy (family context)	456	3.77	.91	-.63(.11)	.10(.23)	
Social autonomy (school context)	455	3.52	.89	-.15(.11)	-.26(.23)	
Personal autonomy (peer context)	455	3.67	.74	-.07(.11)	-.29(.23)	.63
Personal autonomy (family context)	456	3.48	.81	-.14(.11)	-.12(.23)	
Personal autonomy (school context)	439	3.33	.84	.04(.12)	-.38(.23)	
Accommodation (peer context)	460	4.01	.94	-.72(.11)	-.14(.23)	.61
Accommodation (family context)	461	3.66	.97	-.45(.11)	-.43(.23)	
Accommodation (school context)	451	3.39	1.0	-.06(.12)	-.48(.23)	
Distinctiveness (peer context)	460	4.10	.89	-.81(.11)	.08(.23)	.62
Distinctiveness (family context)	454	3.99	1.0	-.82(.11)	.09(.23)	
Distinctiveness (school context)	446	3.67	.99	-.30(.12)	-.53(.23)	
Autonomy and relatedness scenarios	N	Mean	SD	Skewness (SE)	Kurtosis (SE)	Cronbach's Alpha (α)
Social autonomy (peer context)	395	2.74	1.18	.11(.12)	-.60(.25)	.63
Social autonomy (family context)	398	2.61	1.21	.23(.12)	-.66(.24)	
Social autonomy (school context)	416	2.59	1.13	.12(.12)	-.51(.24)	
Personal autonomy (peer context)	411	3.52	1.07	-.15(.12)	-.45(.24)	.74
Personal autonomy (family context)	416	3.50	1.10	-.18(.12)	-.39(.24)	
Personal autonomy (school context)	416	3.34	1.11	-.01(.12)	-.40(.24)	
Accommodation (peer context)	373	3.05	1.26	-.04(.13)	-.81(.25)	.65
Accommodation (family context)	376	3.11	1.27	-.05(.13)	-.80(.25)	
Accommodation (school context)	360	2.77	1.13	.19(.13)	-.33(.26)	
Distinctiveness (peer context)	363	3.15	1.19	-.11(.13)	-.58(.26)	.69
Distinctiveness (family context)	355	3.08	1.30	-.06(.13)	-.81(.26)	
Distinctiveness(school context)	356	2.80	1.20	.11(.13)	-.56(.26)	

Social-oriented and individual-oriented achievement motivation	N	Mean	SD	Skewness (SE)	Kurtosis (SE)	Cronbach's Alpha (α)
SOAM 1	456	4.27	1.42	-.53(.11)	-.44(.23)	.76
SOAM 2	456	4.57	1.50	-.82(.11)	-.28(.23)	
SOAM 3	456	3.16	1.60	.27(.11)	-.93(.23)	
SOAM 4	455	3.78	1.69	-.13(.11)	-1.18(.23)	
SOAM 5	456	4.03	1.49	-.32(.11)	-.71(.23)	
SOAM 6	454	3.76	1.66	-.12(.12)	-1.16(.23)	
IOAM 1	452	4.93	1.41	-1.28(.12)	.76(.23)	.76
IOAM 2	453	4.43	1.41	-.68(.12)	-.17(.23)	
IOAM 3	452	4.25	1.45	-.42(.12)	-.67(.23)	
IOAM 4	453	4.02	1.59	-.37(.12)	-.88(.23)	
IOAM 5	452	4.32	1.41	-.54(.12)	-.44(.23)	
IOAM 6	453	3.54	1.60	.02(.12)	-.99(.23)	

Note. Autonomy and relatedness scales ranged from 0 to 5. The range of autonomy and relatedness scenarios scores was 1-5. Ratings on the achievement motivation orientations ranged from 1 to 6.

SOAM 1= I always try hard to do what my parents expect me to do, as I don't want to disappoint them.
SOAM 2= The reason why I work so hard is that only doing well in school can bring me a bright future.
SOAM 3= I work very hard on my school work in that teachers usually praise hard workers.
SOAM 4= I always think about this way: are my parents satisfied with my performance?
SOAM 5= I always try harder and harder to achieve what my parents expect on me.
SOAM 6= The primary goal of my life is to do things that make my parents be proud of me.
IOAM 1= I will try my best to do things that I value, no matter how difficult it might be.
IOAM 2= I try hard to be perfect when I am working.
IOAM 3= I won't give up what I am doing, even without other people watching.
IOAM 4= I always think about this way: am I approaching the goals that I have set for myself?
IOAM 5= I always try different ways to resolve the problems in work, based on my own judgments.
IOAM 6= I like working just because work itself makes my life meaningful.

Table 11

First-order correlations among Study 3 scenario scores

	1	2	3	4	5	6	7	8	9	10	11	12
1. Peer context social autonomy	--	.39**										
2. Peer context accommodation		--										
3. Peer context personal autonomy			--	.15**								
4. Peer context distinctiveness				--								
5. Family context social autonomy					--	.45**						
6. Family context accommodation						--						
7. Family context personal autonomy							--	.15**				
8. Family context distinctiveness								--				
9. School context social autonomy									--	.41**		
10. School context accommodation										--		
11. School context personal autonomy											--	.22**
12. School context distinctiveness												--

* $p < .05$. ** $p < .01$.

N = 355-416

First-order autonomy CFA models⁵. An initial two-factor (personal vs. social) autonomy measurement model based on *scale* scores was specified, with mean scores in each of three social contexts being used as indicators for both forms of autonomy. Before model testing, the variables involved were screened for normality and outliers. There was evidence of multivariate nonnormality according to Mardia's (1970, 1974) normalized estimate of multivariate kurtosis (kurtosis = 5.42; c. r. = 5.96). To test multivariate outliers, Mahalanobis distance values were examined and no scores were observed to differ markedly from the rest of the data.

Asymptotic distribution-free (ADF), an alternative estimation approach to maximum likelihood (ML), was conducted in AMOS 20.0. Despite the finding that the initial model adequately fit the data, an error covariance between *family context social autonomy* and *school context personal autonomy* was suggested in model estimation. This suggested parameter may indicate something uniquely shared in family and school contexts that could not be accounted for by the model. Error covariances that make substantive sense can be included in a model if doing so significantly improves the overall model fit (e.g., Byrne, 2010; Kline, 2005). Thus, the suggested error correlation was added to a subsequently specified model (see Figure 5).

Evaluation of the re-specified model fit revealed that no parameter estimates fell outside the admissible range. Also, as shown in Figure 6, all factor loadings (ranging from .45 to .73) were reasonable and statistically significant. The global model fit indices for the revised two-

⁵ The first-order autonomy CFA models were also tested separately for the three social contexts (peer, family, school). In each model, mean scores based on scales and scenarios were used as indicators for both forms of autonomy. However, all of the model estimations failed, which may in part be attributed to either model misspecifications or the relatively low correlations between scale and scenario scores (see Table 12) assessing a given construct.

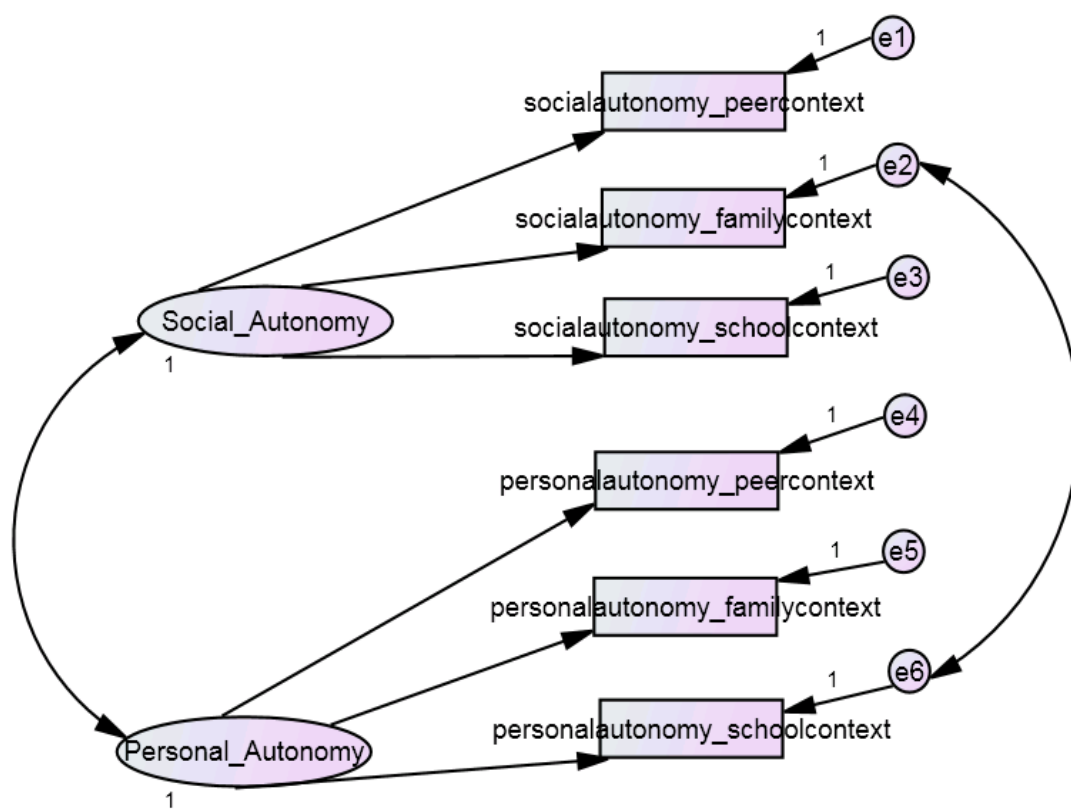


Figure 5 Hypothesized two-factor measurement model of autonomy based on scale scores.

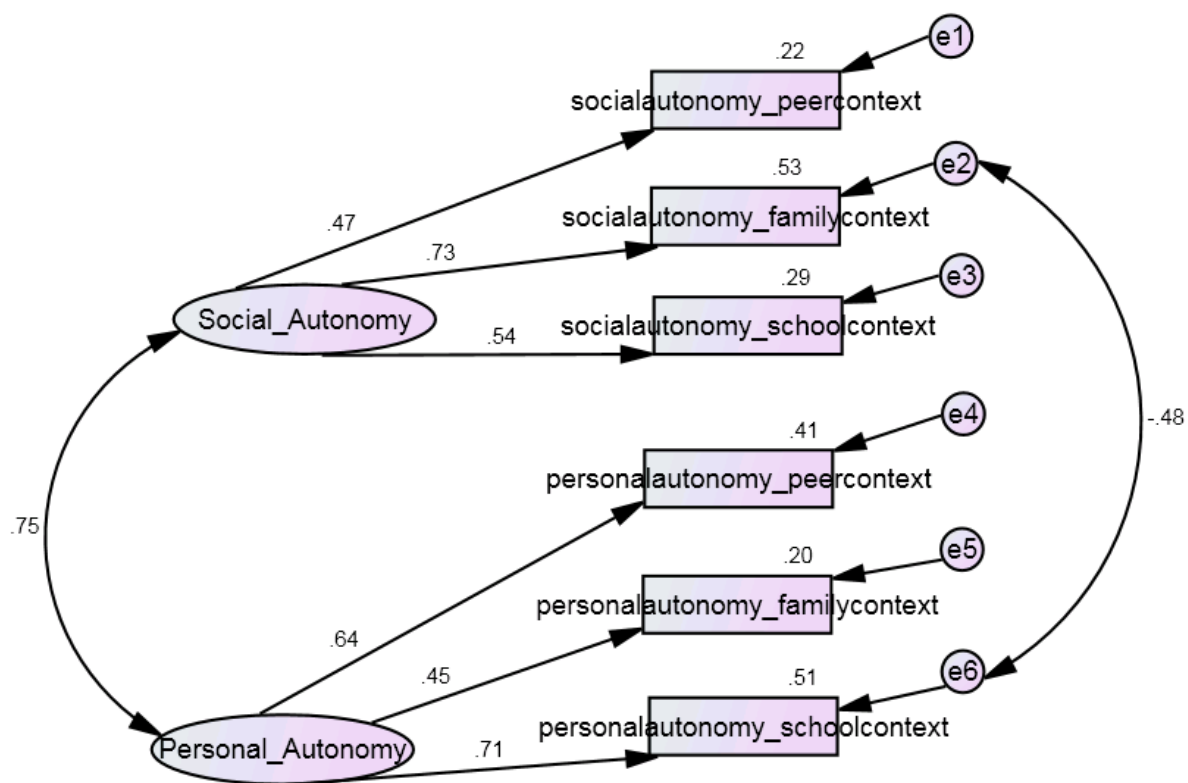


Figure 6 Estimated two-factor measurement model of autonomy based on scale scores. All standardized estimates above were statistically significant at the .001 level.

factor model were as follows: $\chi^2_{(7)} = 7.73$, $p > .05$; CFI = .99; RMSEA = .02, with 90% confidence interval .00 - .06 and PLOSE of .88. In addition, based on standardized residual covariances, as well as modification indices (MI), no any evidence of model misfit was identified.

Given the high correlation between the two factions, a one-factor model was also specified and tested (when the correlation between social autonomy and personal autonomy in the two-factor model was constrained to be 1, model estimation generated inadmissible solutions). The following was the global model fit indices for the one-factor: $\chi^2_{(8)} = 18.30$, $p < .05$; CFI = .95; RMSEA = .05, with 90% confidence interval .02 - .09 and PLOSE of .40. However, model comparison indicated that $\chi^2 D_{(1)} = \chi^2_{\text{one-factor (8)}} - \chi^2_{\text{two-factor (7)}} = 10.57$, $p < .01$, suggesting that the fit of the one-factor model is statistically worse than that of the two-factor model.

Based on the information above, it can be concluded that the two-factor autonomy model based on *scale* scores fit the data better than the one-factor model. However, it should be noted that the factor correlation was relatively high ($r = .75$).

Similar analyses were conducted based on autonomy *scenario* scores. A second two-factor autonomy measurement model was specified (see Figure 7). No multivariate outliers were detected. However, data revealed a violation of multivariate normality (kurtosis = 13.14; c.r. = 14.46). Based on ADF estimation, all parameter estimates were feasible and statistically significant, with factor loadings ranging from .50 to .83 (see Figure 8). The global model fit indices for this two-factor were as follows: $\chi^2_{(8)} = 16.12$, $p < .05$; CFI = .96; RMSEA = .05,

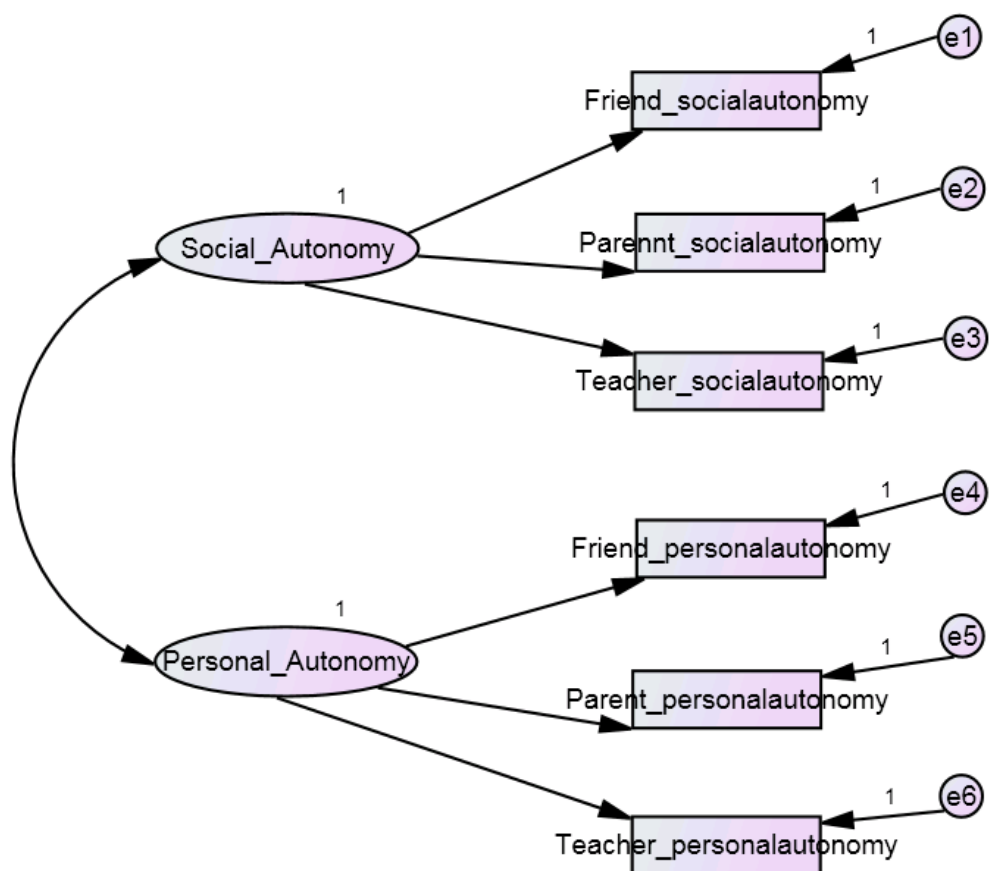


Figure 7 Hypothesized two-factor measurement model of autonomy based on scenario scores.

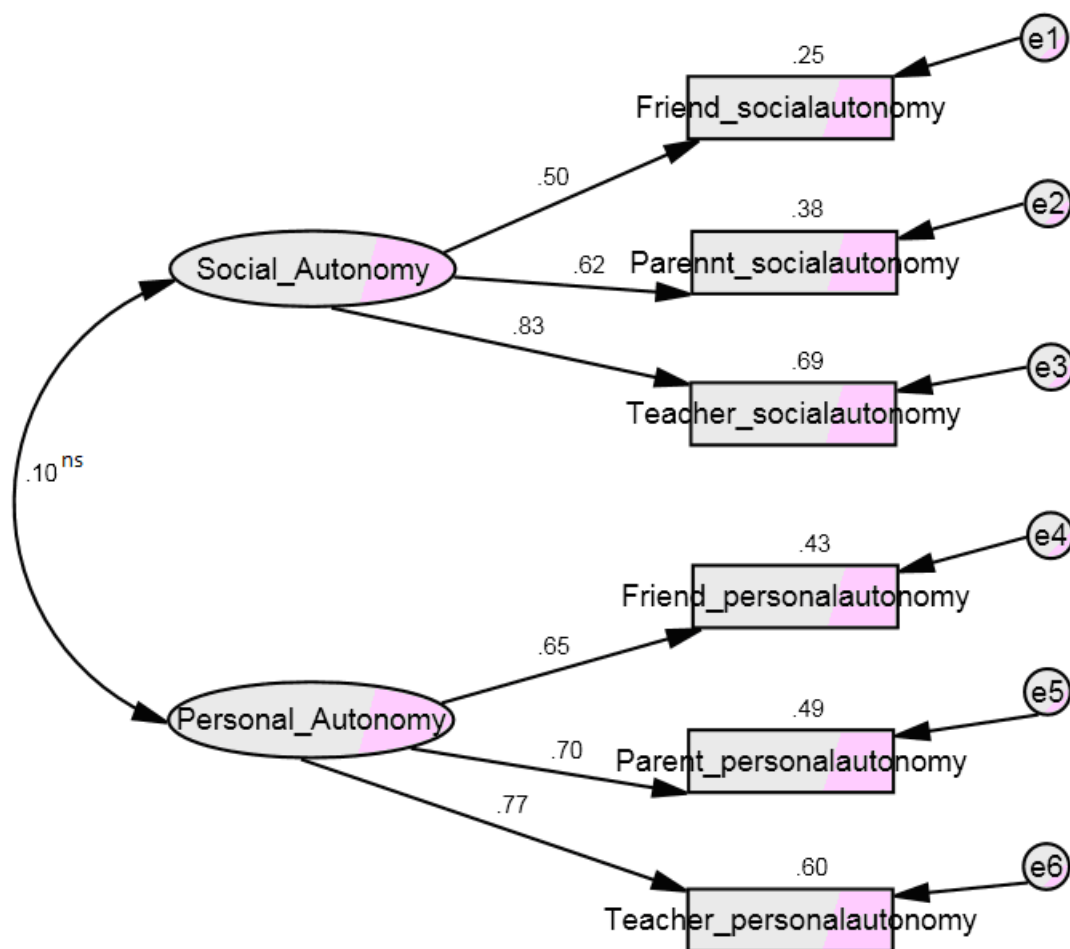


Figure 8 Estimated two-factor measurement model of autonomy based on scenario scores. All standardized estimates above were statistically significant at the .001 level except for those designated “ns”.

with 90% confidence interval .01-.08 and PLOSE of .52. In addition to the good fit of the model, MI was trivial in nature.

Again, given the low correlation between these two factors ($r = .10$), an equivalent model with the factor correlation in the two-factor model constrained to be zero was specified and examined. The model-fitting information showed that the alternative model fit the data equally well: $\chi^2_{(9)} = 17.98, p < .05$; CFI = .95; RMSEA = .05, with 90% confidence interval .01-.08 and PLOSE of .53. Model comparison between the constrained and unconstrained two-factor models indicated that $\chi^2_{D(1)} = 1.86, p > .05$, suggesting the independence of personal autonomy and social autonomy, based on *scenario* scores.

In summary, according to the current data, the two-factor model of autonomy was supported. However, the magnitudes of the correlations between personal and social autonomy differed markedly, depending on the type of measures used.

Second-order autonomy CFA models. To test the proposed two-level (universal vs. culture-specific) autonomy model, a second-order autonomy CFA model based on *scale* scores was specified, in which the universal autonomy was specified as the higher order factor and culture-specific forms (personal and social autonomy) as first-order factors (see Figure 9).

As shown in Figure 10, ADF estimation indicated that both second-order factor loadings (personal and social autonomy) were high and statistically significant. Further, the second-order factor accounted for more than 60% of variances in both first-order factors. Along with no clear evidence of model misfit (standardized residual covariances and MI), the global model fit indices suggested that this second-order model represented an adequate fit to the data ($\chi^2_{(7)} = 7.73, p > .05$; CFI = .99; RMSEA = .02, with 90% confidence interval .00 - .06 and PLOSE of .88).

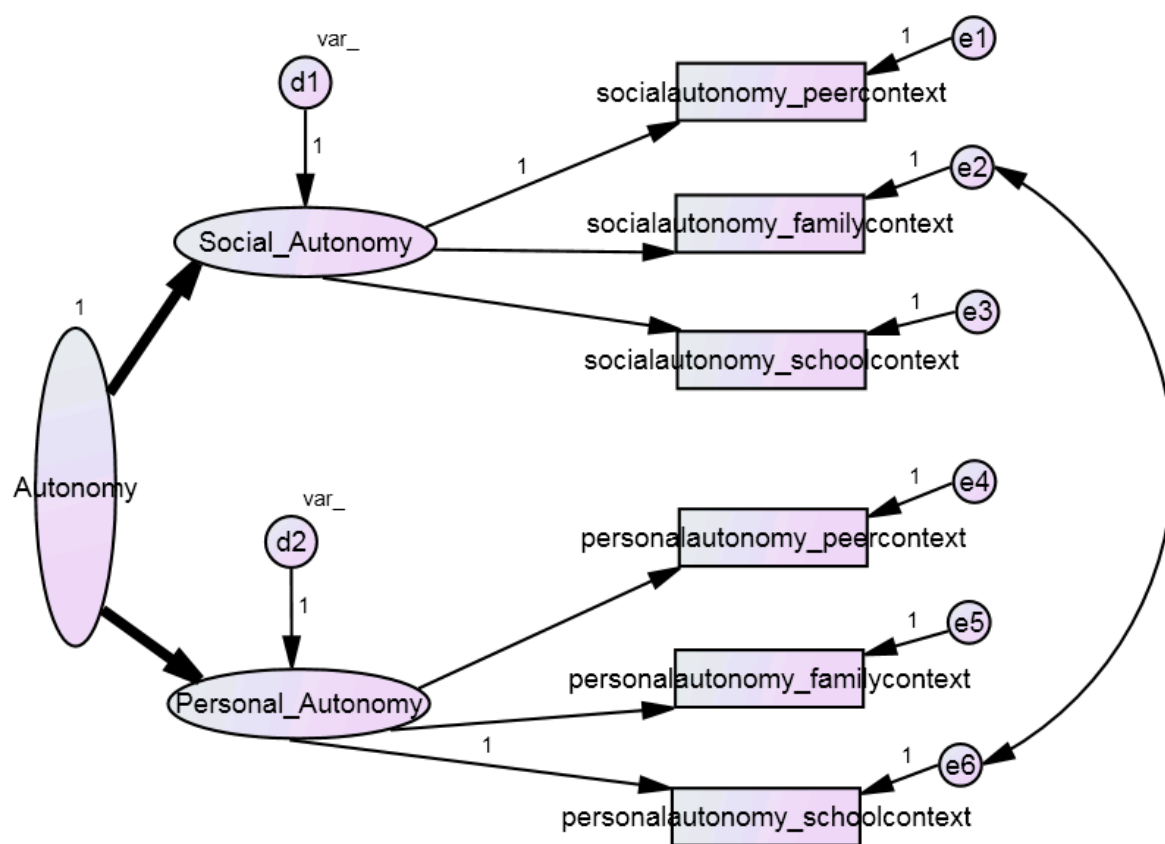


Figure 9 Hypothesized second-order measurement model of autonomy based on scale scores.

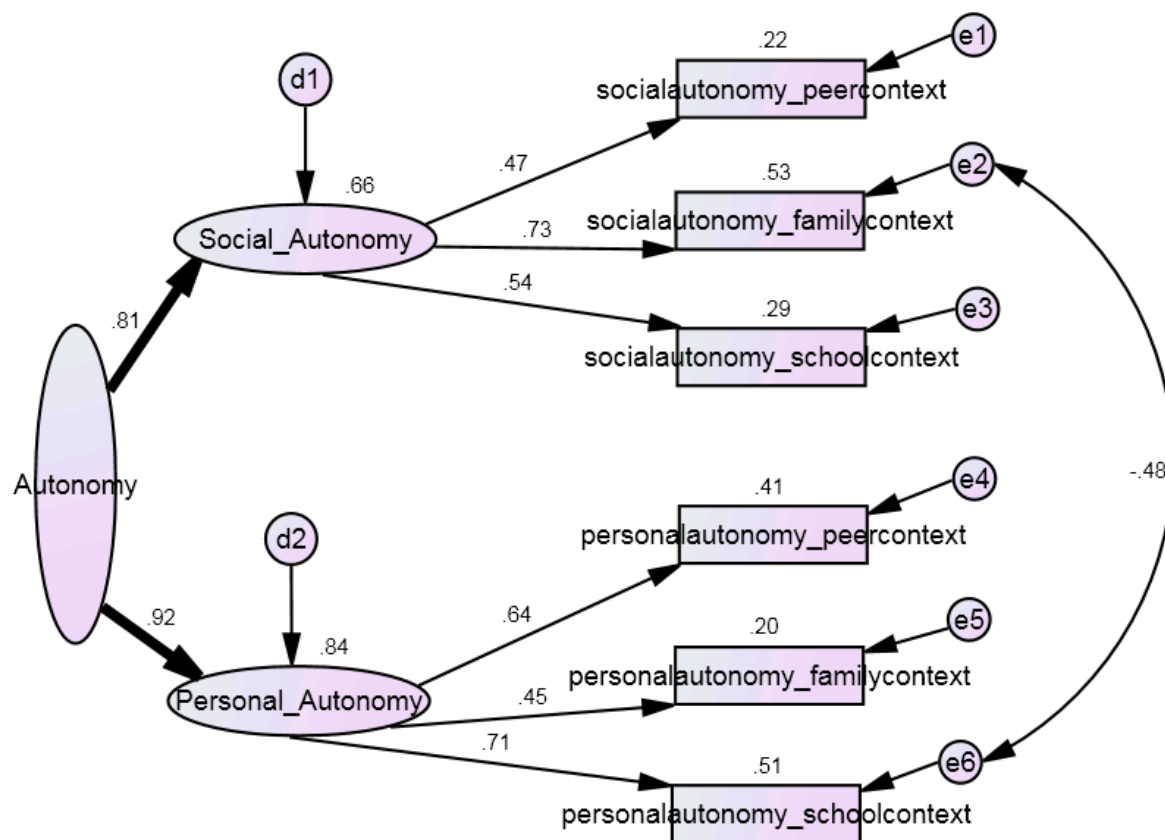


Figure 10 Estimated second-order measurement model of autonomy based on scale scores. All standardized estimates above were statistically significant at the .001 level.

Similarly, another second-order autonomy CFA model based on *scenario* scores was specified and assessed with ADF estimation (see Figures 11 and 12). This model adequately fit the data, with $\chi^2_{(8)} = 16.12, p < .05$; CFI = .96; and RMSEA = .045 with 90% confidence interval .01 -.08 and PLOSE of .52. However, in the current mode, only one of the two second-order factor loadings - *personal autonomy* but not social autonomy, was statistically significant.

Taken together, these findings suggested that the second-order autonomy CFA model based on *scale* scores, rather than the one based on *scenario* scores, lend support for the hypothesized two-level (universal vs. culture-specific) autonomy.

Multitrait-multimethod (MTMM) autonomy CFA models. To evaluate potential method effects (or biases) on the correlations between the two forms of autonomy measured by scale *versus* scenario scores, the following series of multitrait-multimethod (MTMM) CFA models were tested: correlated-uniqueness (CU) model; freely correlated traits-freely correlated methods model; freely correlated traits-uncorrelated methods model; and perfectly correlated traits-freely correlated methods model. In the correlated-uniqueness (CU) model, method effects are determined by the error covariances using the same method (Kenny & Kashy, 1992). In the other three models, each method is treated as a factor and high loadings on the method effects indicate common method effects (e.g., Byrne, 2010; Kline, 2005).

However, all estimations failed, as a result of either improper solutions or underidentification problems. As suggested by Chen, Bollen, Paxton, Curran, and Kirby (2001), the model estimation failure may, in part, be attributed to the low correlations among variables included in the MTMM autonomy models in the current study (see Table 12 for a correlation matrix among the model variables). Therefore, there was no way to evaluate the method effects.

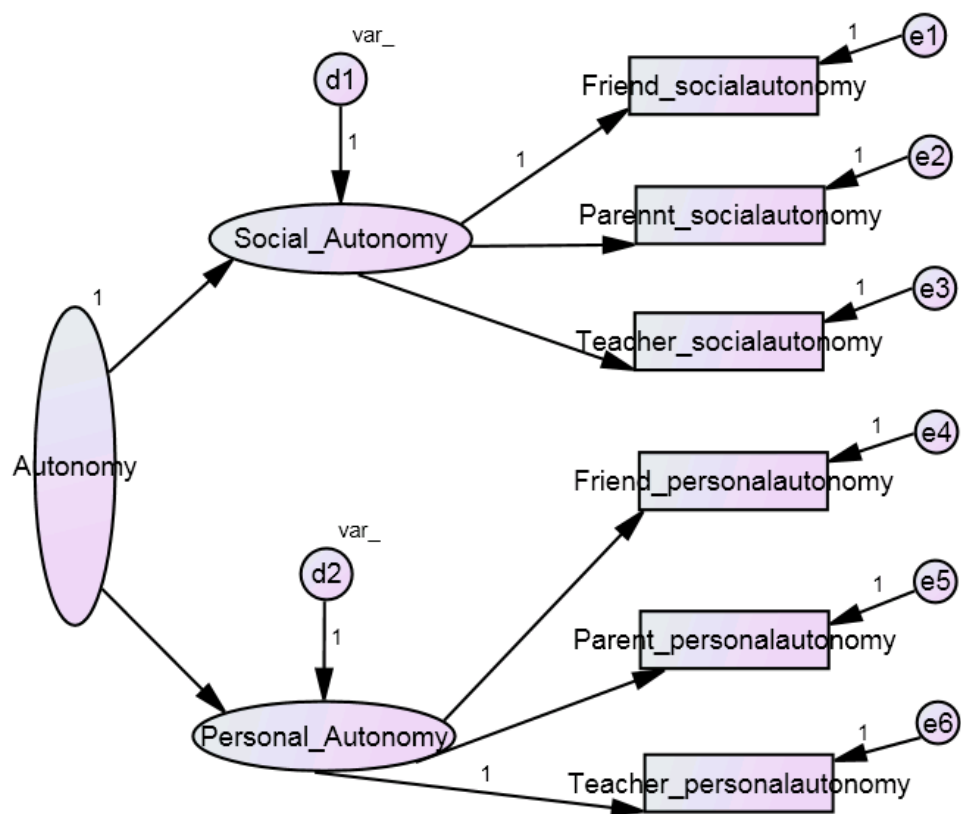


Figure 11 Hypothesized second-order measurement model of autonomy based on scenario scores.

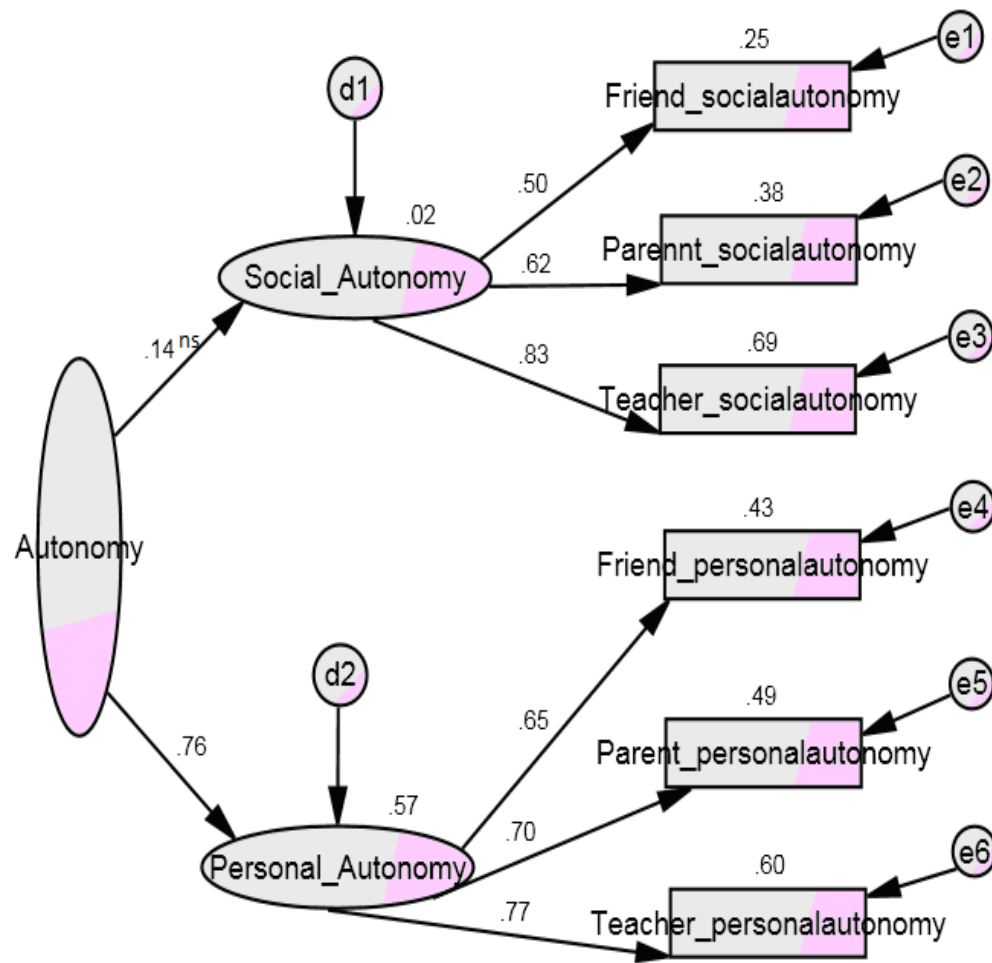


Figure 12 Estimated second-order measurement model of autonomy based on scenario scores. All standardized estimates above were statistically significant at the .001 level except for those designated “ns”.

Table 12

Correlations among autonomy scores in Study 3

	1	2	3	4	5	6	7	8	9	10	11	12
1.Personal autonomy_peer _scale	--	.31**	.44**	.27**	.33**	.20**	.16**	.14**	.14**	.06	.01	.02
2.Personal autonomy_family_scale		--	.32**	.16**	.21**	.13**	.09	.04	.11*	-.01	.08	.09
3.Personal autonomy_school_scale			--	.26**	.16**	.29**	.16**	.05	.17**	.07	.03	.12*
4.Social autonomy_peer _scale				--	.32**	.24**	.06	.04	.08	-.01	-.02	.03
5.Social autonomy_family_scale					--	.40**	.05	.03	-.00	.00	.14**	.12**
6.Social autonomy_school_scale						--	.03	.00	-.06	.03	.08	.14**
7.Personal autonomy_peer _scenario							--	.44**	.47**	.09	-.01	.04
8.Personal autonomy_family_ scenario								--	.52**	-.01	-.02	.06
9.Personal autonomy_school_ scenario									--	-.02	-.01	.12*
10.Social autonomy_peer_ scenario										--	.31**	.32**
11.Social autonomy_family_ scenario											--	.43**
12.Social autonomy_school_scenario												--

* $p < .05$. ** $p < .01$.

N = 373-454

Relatedness measurement models.

First-order relatedness CFA models⁶. As with autonomy, a two-factor (accommodation vs. distinctiveness) relatedness measurement model based on *scale* scores was specified, with mean scores in each of three social contexts being used as indicators of both forms of relatedness. ADF was used for model estimation due to multivariate nonnormality (multivariate kurtosis = 10.08; c.r. = 11.10). In addition, as suggested by the existing model estimation, two error covariances (one between indicators of *peer context accommodation* and *peer context distinctiveness*, and the other between *school context accommodation* and *school context distinctiveness*) were included in the respecified model (see Figure 13).

As shown in Figure 14, all factor loadings (ranging from .48 to .80) were statistically significant. The results showed a good fit of model: $\chi^2_{(6)} = 11.57$, $p > .05$; CFI = .98; RMSEA = .045, with 90% confidence interval .00 -.08 and PLOSE of .53.

Given the estimated high correlation between accommodation and distinctiveness ($r = .86$), an alternative one-factor model was also specified and tested (when the correlation between accommodation and personal distinctiveness in the two-factor model was constrained to be 1.0, model estimation generated inadmissible solutions). The global model fit indices for the one-factor were as follows: $\chi^2_{(7)} = 23.71$, $p < .01$; CFI = .95 ; RMSEA = .07, with 90% confidence interval .04 - .10 and PLOSE of .11. Further, model comparison indicated that

⁶ The first-order relatedness CFA models were also tested separately for the three social contexts (peer, family, school). In each model, mean scores based on scales and scenarios were used as indicators for both forms of relatedness. However, none of the model estimations was successful. Similar to autonomy, either model misspecifications or low correlations between scale and scenario scores (see Table 13) may be responsible for the model estimation failures.

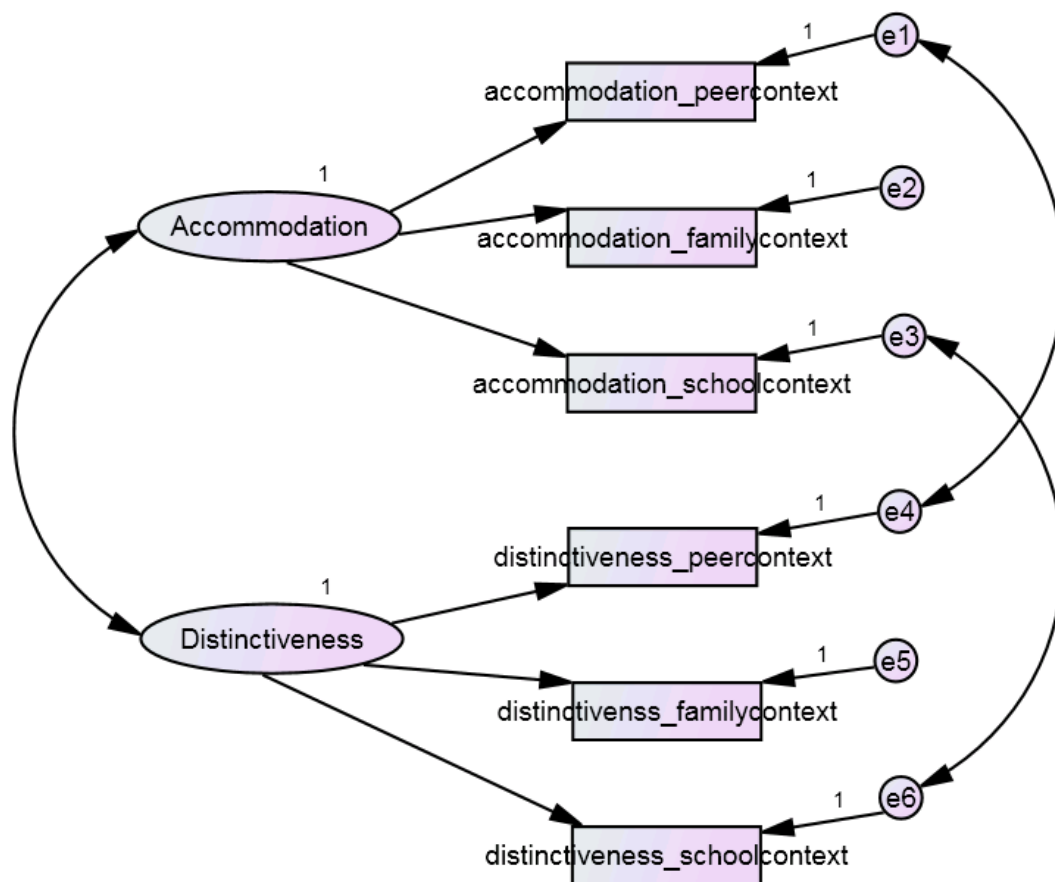


Figure 13 Hypothesized two-factor measurement model of relatedness based on scale scores.

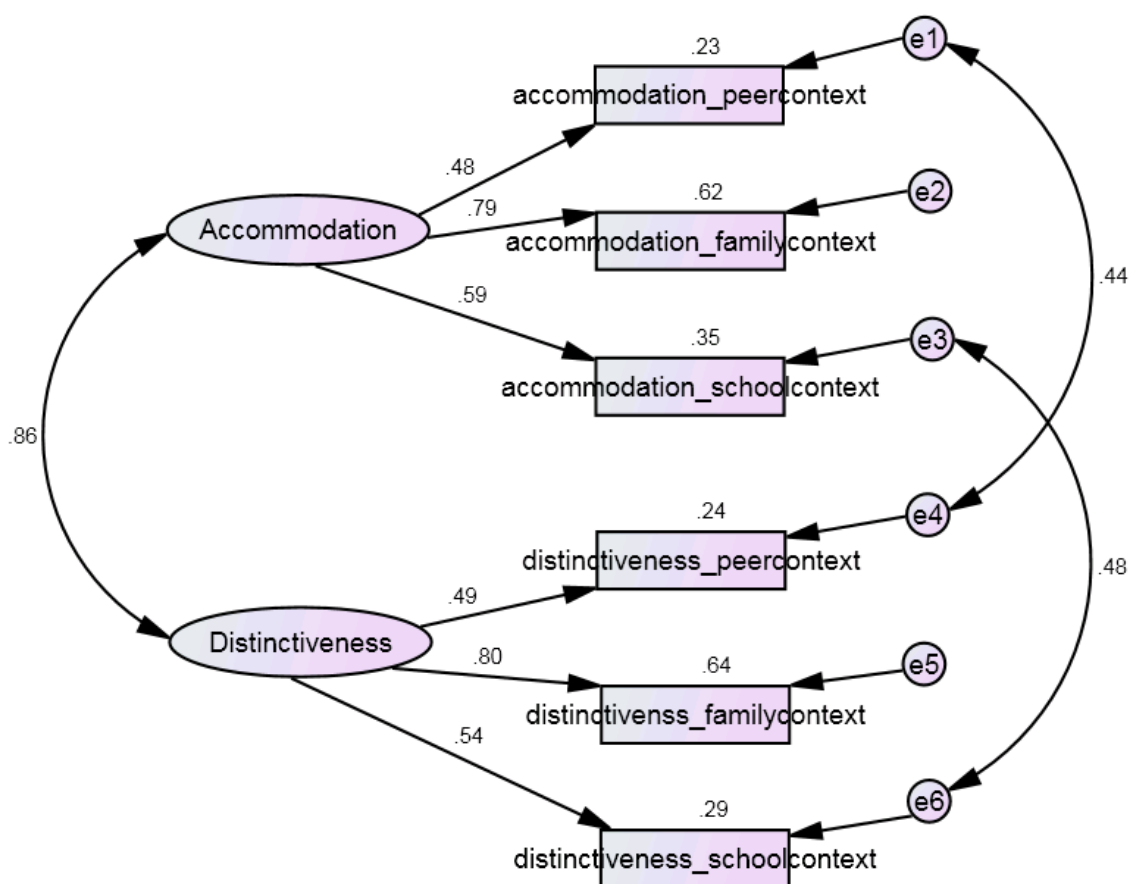


Figure 14 Estimated two-factor measurement model of relatedness based on scale scores. All standardized estimates above were statistically significant at the .001 level.

$\chi^2_{D(1)} = \chi^2_{\text{one-factor (7)}} - \chi^2_{\text{two-factor (6)}} = 12.14, p < .01$, indicating that the fit of the one-factor model is statistically worse than that of the two-factor model. Therefore, it would be more appropriate to choose the two-factor rather than the one-factor relatedness model based on scale scores.

Again, similar analyses were conducted based on relatedness *scenario* scores. A second two-factor measurement model was specified. Initial ADF estimation (multivariate kurtosis = 22.07; c. r. = 24.29) suggested two additional error covariances—one for indicators of *peer context accommodation* and *peer context distinctiveness* and another for *family context accommodation* and *family context distinctiveness*, be included in the revised mode (see Figure 15).

In addition to the statistically significant factor loadings (see Figure 16), the global model fit indices for this respecified two-factor relatedness suggested an adequate mode fit: $\chi^2_{(6)} = 16.42, p < .05$; CFI = .95; RMSEA = .06, with 90% confidence interval .03 - .09 and PLOSE of .26. An alternative one -factor model (when the correlation between accommodation and personal distinctiveness in the two-factor model was constrained to be 1.0, model estimation generated inadmissible solutions) was specified and examined. Both the substantial local model misfit information and global model fit indices ($\chi^2_{(7)} = 36.41, p < .001$; CFI = .85; RMSEA = .10; 90% C. I. = .07, .13) determined a bad-fitting one-factor model. Thus, the two-factor model based on *scenario* scores fit the data better than the one-factor model, although with a relatively high factor correlation ($r = .71$).

Thus far, data based on both *scale* and *scenario* scores seemed to support the two-factor (accommodation and distinctiveness) relatedness model.

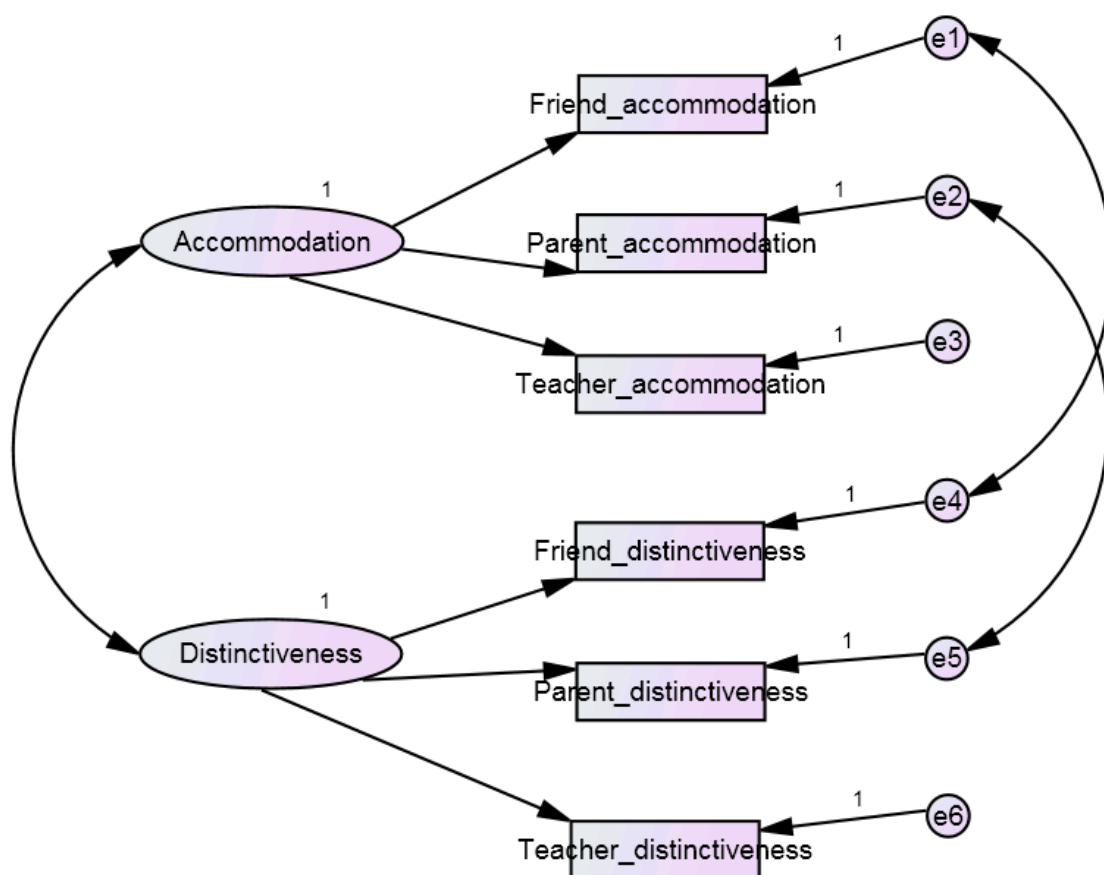


Figure 15 Hypothesized two-factor measurement model of relatedness based on scenario scores.

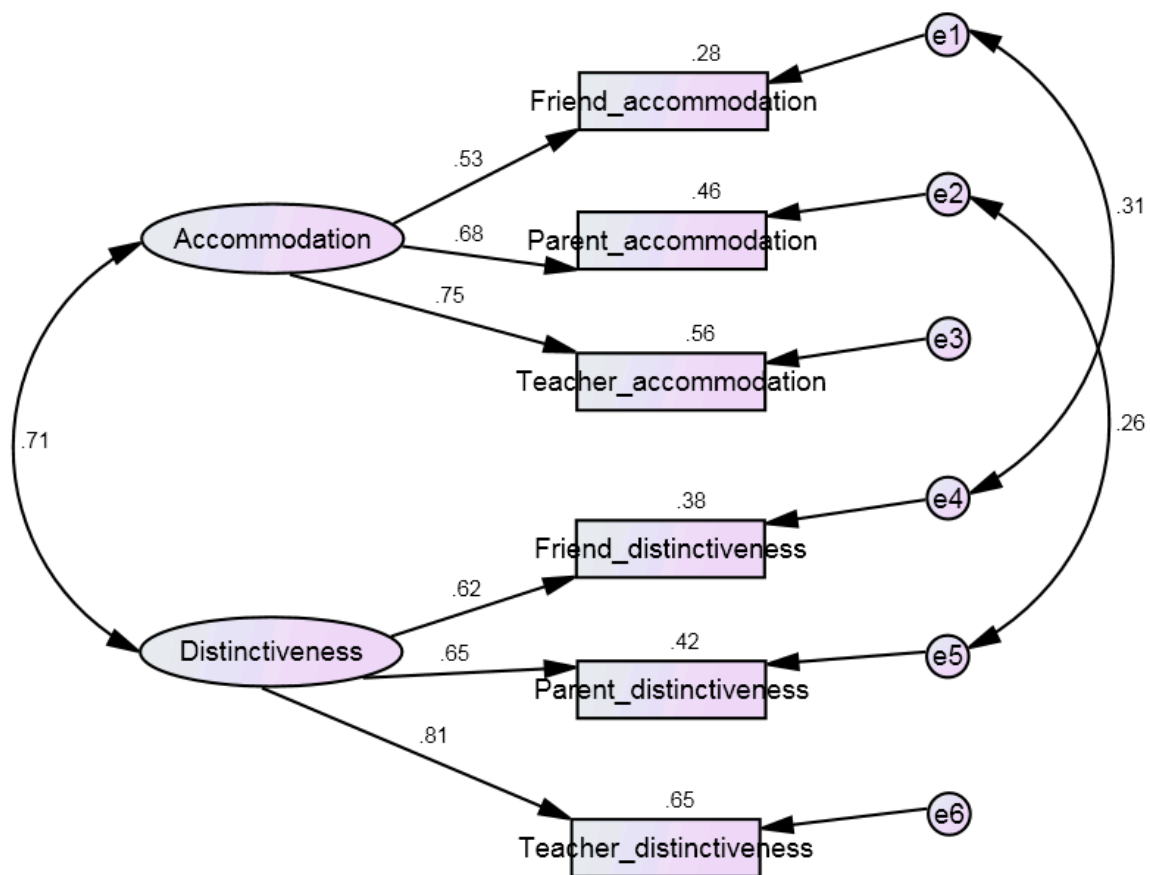


Figure 16 Estimated two-factor measurement model of relatedness based on scenario scores. All standardized estimates above were statistically significant at either the .001 or .01 level.

Second-order relatedness CFA models. To test the proposed two-level (universal vs. culture-specific) relatedness model, a second-order relatedness CFA model based on *scale* scores were specified and assessed (see Figures 17 and 18). Both second-order factor loadings (accommodation and distinctiveness) were statistically significant, and the second-order factor accounted for more than 80% of variances in both first-order factors. In addition, this model fit the data well ($\chi^2_{(6)} = 11.57$, $p > .05$; CFI = .98; RMSEA = .05; 90% C. I. = .00, .08).

As shown in Figures 19 and 20, another second-order relatedness CFA model based on *scenario* scores was specified and assessed. Again, both second-order factor loadings (accommodation and distinctiveness) were statistically significant and the second-order factor accounted for more than 60% of variances in both first-order factors. The specified model was found to be adequate: $\chi^2_{(6)} = 16.42$, $p < .05$; CFI = .95; RMSEA = .06, with 90% confidence interval .03 - .09 and PLOSE of .26.

In summary, using both scale and scenario scores, the expected two-level relatedness model was supported by the current data.

Multitrait-multimethod (MTMM) relatedness CFA modes. Similar to the analyses conducted for autonomy scores, a series of multitrait-multimethod (MTMM) CFA models (Correlated-Uniqueness (CU) model, freely correlated traits-freely correlated methods model, freely correlated traits-uncorrelated methods model perfectly correlated traits-freely correlated methods model) were specified and tested on relatedness scores. Again, no successful estimations were generated, indicated by either inadmissible solutions or underidentification problems. As shown in Table 13, the relatively low correlation among the variables involved in the models described above might be responsible for the model estimation failures.

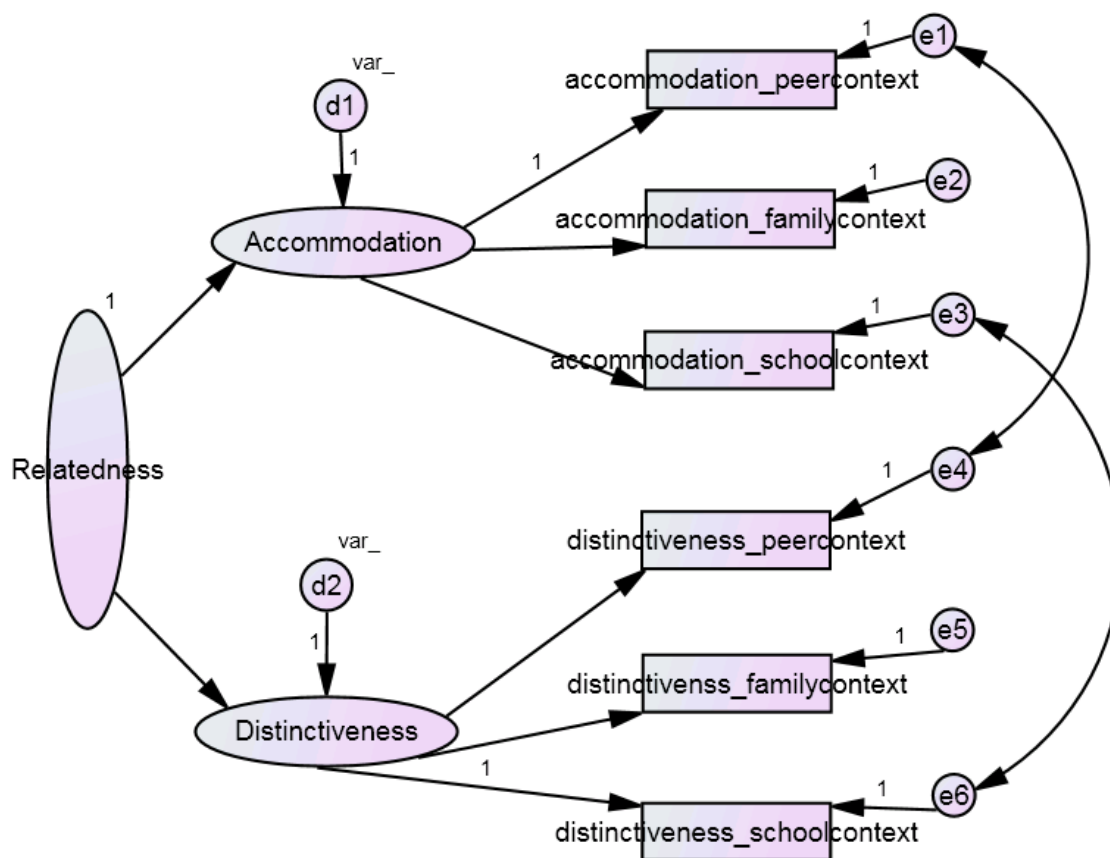


Figure 17 Hypothesized second-order measurement model of relatedness based on scale scores.

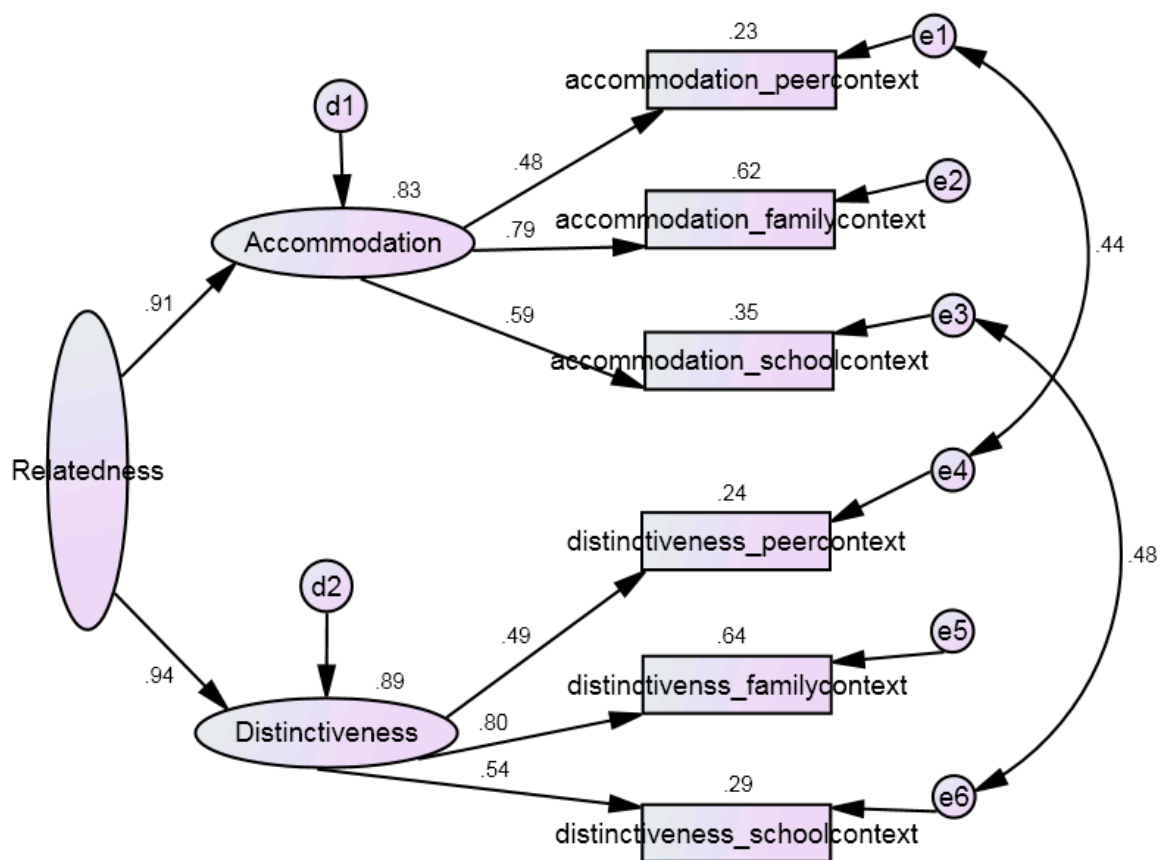


Figure 18 Estimated second-order measurement model of relatedness based on scale scores. All standardized estimates above were statistically significant at the .001 level.

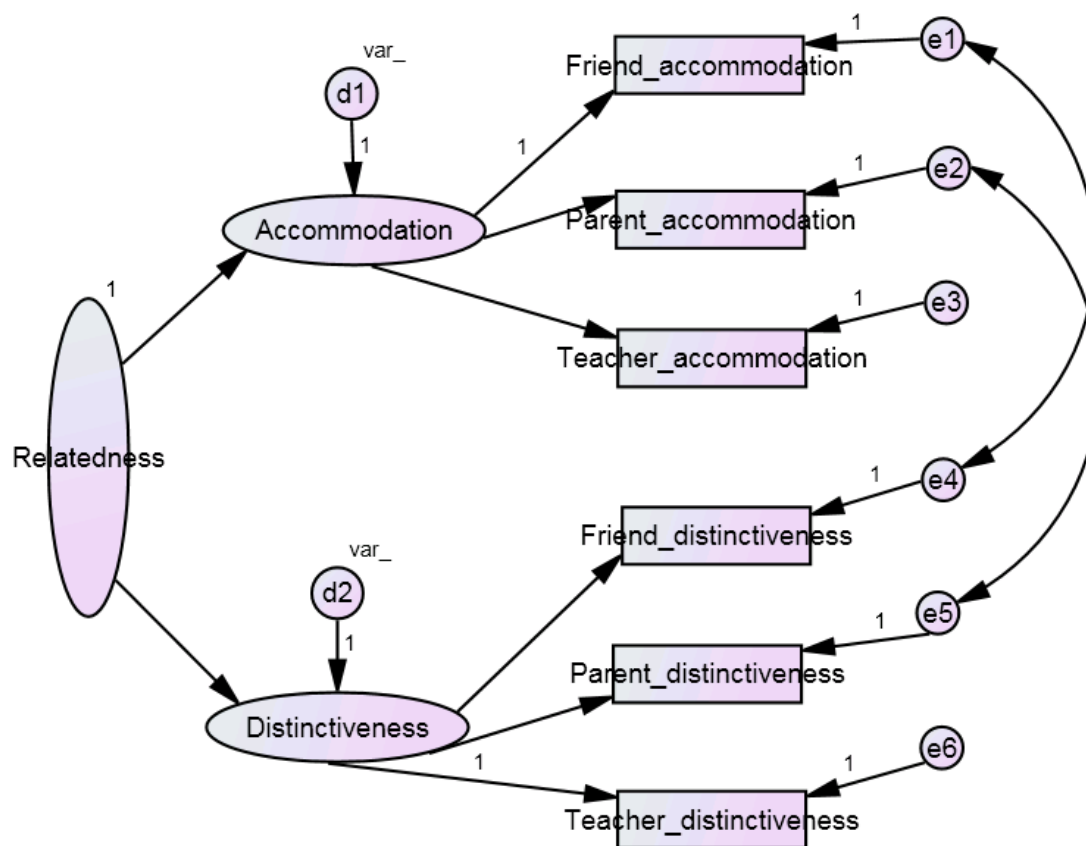


Figure 19 Hypothesized second-order measurement model of relatedness based on scenario scores.

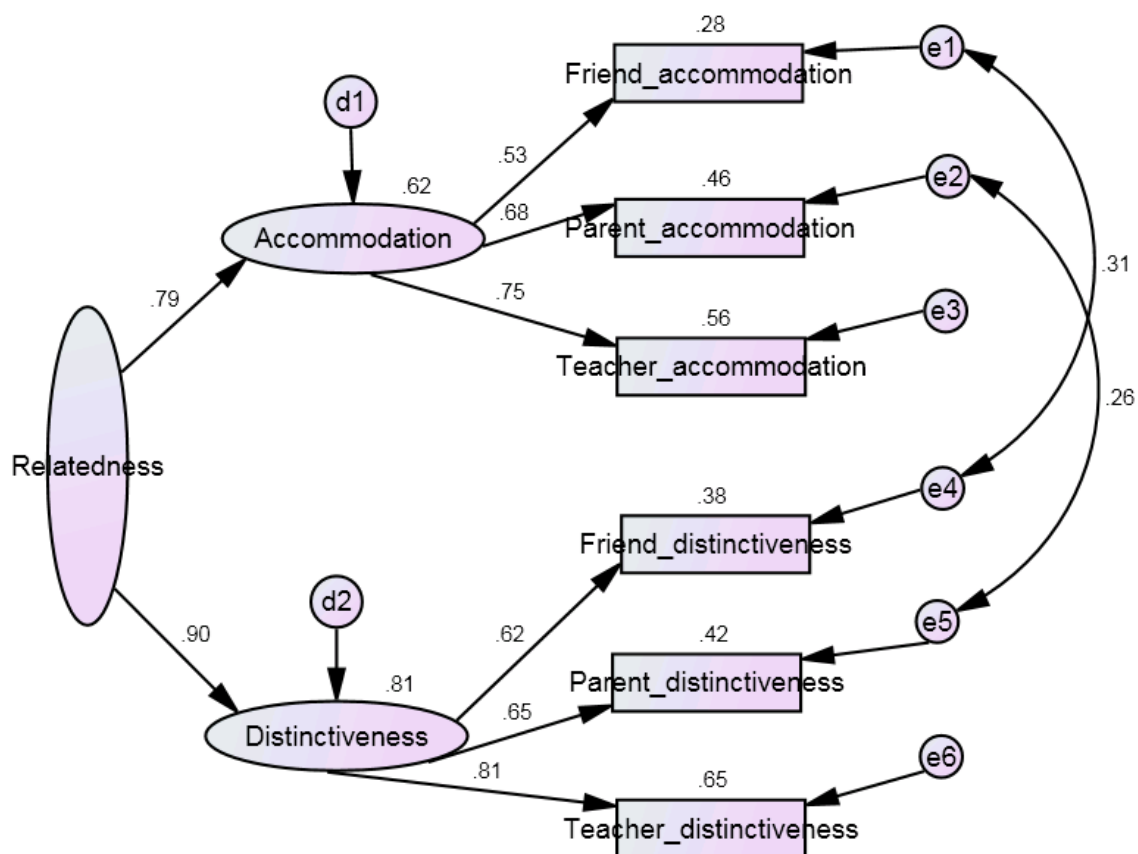


Figure 20 Estimated second-order measurement model of relatedness based on scenario scores. All standardized estimates above were statistically significant at either the .001 or .01 level.

Table 13

Correlations among relatedness scores in Study 3

	1	2	3	4	5	6	7	8	9	10	11	12
1.Distinctiveness_peer_scale	-	.36**	.29**	.55**	.25**	.28**	.05	.05	-.02	.22**	.07	-.05
2.Distinctiveness_family_scale		--	.37**	.29**	.56**	.37**	.01	.29**	.06	.09	.32**	.13*
3.Distinctiveness_school_scale			--	.24**	.34**	.60**	.00	.07	.09	.08	.11*	.28**
4.Accommodation_peer_scale				--	.29**	.32**	.02	.02	-.14**	.20**	-.01	-.11*
5.Accommodation_family_scale					--	.42**	-.07	.16**	.04	.02	.30**	.13*
6.Accommodation_school_scale						--	-.03	.13*	.21**	.07	.17**	.19**
7.Distinctiveness_peer_scenario							--	.37**	.41**	.39**	.24**	.35**
8.Distinctiveness_family_scenario								--	.49**	.21**	.39**	.25**
9.Distinctiveness_school_scenario									--	.23**	.27**	.41**
10.Accommodation_peer_scenario										--	.42**	.30**
11.Accommodation_family_scenario											--	.42**
12.Accommodation_school_scenario												--

* $p < .05$. ** $p < .01$.

N = 323-457

Achievement motivation orientations measurement models. In CFA measure model testing, one general rule is to keep the model parsimony (Kenny, 1979). There are different ways of reducing number of indicators in a model, such as parceling items within a dimension. However, using parcels as indicators of constructs in SEMs has been controversial (e.g., Little, Cunningham, Shahar, & Widaman, 2002). For example, parceling items may bias estimates of other parameters in the model or may obscure true factor structure. A recent review study (Yang, Nay, & Hoyle, 2010) evaluating different approaches to modeling lengthy scales in SEM revealed that biases can be minimized when four or six individual items with high loadings (shortening scales) were used as indicators of latent variables. Both of the two 30-item achievement motivation orientations subscales demonstrated excellent internal reliabilities in the current data (α s = .90 and .91 for SOAM and IOAM, respectively). Thus, I chose the first six items of both subscales to obtain parsimonious models, while trying to avoid the potential problems of parceling.

A social-oriented achievement motivation measurement model and an individual-oriented achievement motivation were specified and tested (see Figures 21 and 22 for estimated models), using the first six items of each of the two scales. ADF estimation (kurtosis = 18.03; c.r. = 19.84 and kurtosis = 23.66; c.r. = 26.03 for SOAM and IOAM models, respectively) revealed that both models fit the data well. For the social-oriented motivation model, $\chi^2_{(9)} = 15.86$, $p > .05$; CFI = .96; RMSEA = .04, with 90% confidence interval .00 - .07 and PLOSE of .64. For the individual-oriented motivation model, $\chi^2_{(9)} = 19.15$, $p < .05$; CFI = .94; RMSEA = .04, with 90% confidence interval .02 - .08 and PLOSE of .47.

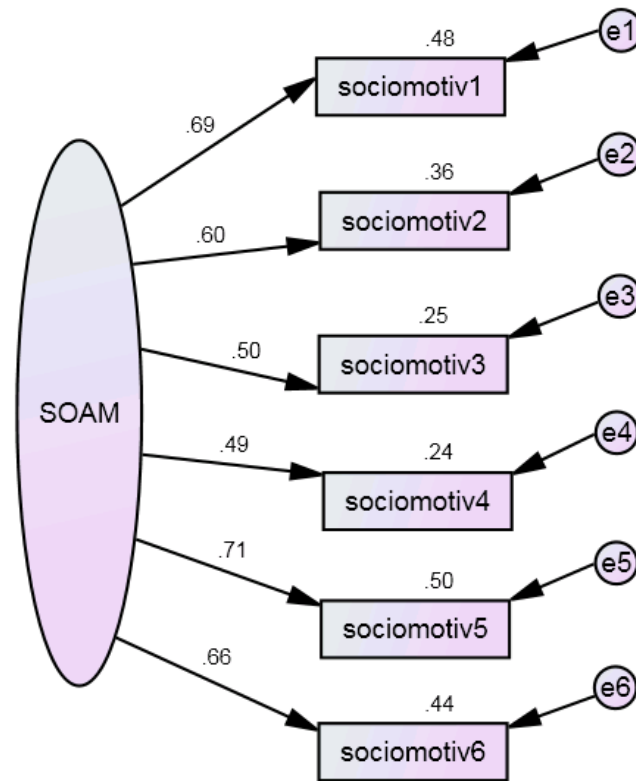


Figure 21 Estimated measurement model of social-oriented achievement motivation (SOAM). All standardized estimates above were statistically significant at the .001 level.

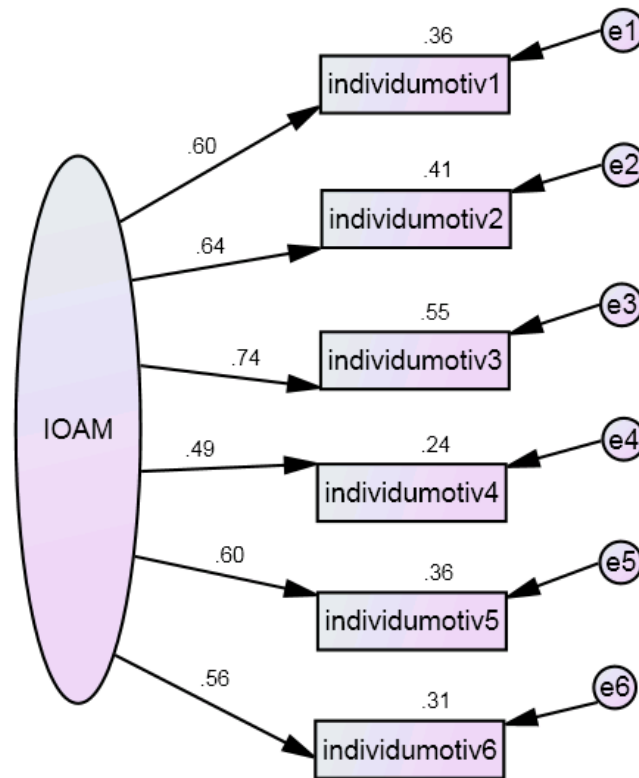


Figure 22 Estimated measurement model of individual-oriented achievement motivation (IOAM). All standardized estimates above were statistically significant at the .001 level.

Structural Models Linking Culture -Specific Forms of Autonomy and Relatedness and Achievement Motivation Orientations

To explore additional support for construct validity of autonomy and relatedness, a series of structural models in which culture-specific forms of autonomy and relatedness were expected to be related to an external criterion (social-oriented vs. individual-oriented achievement motivation) were specified and tested.

Autonomy and achievement motivation orientations. Figures 23 and 24 represent the estimated models based on autonomy scale scores and autonomy scenario scores, respectively.

ADF estimation indicated that the two models were at least minimally adequate. For the mode based on autonomy scale scores, $\chi^2_{(126)} = 236.18, p < .001$; CFI = .85; RMSEA = .04, with 90% confidence interval .04 - .05 and PLOSE of .90. For the mode based on autonomy scenario scores, $\chi^2_{(127)} = 245.44, p < .001$; CFI = .86; RMSEA = .04, with 90% confidence interval .04 - .05 and PLOSE of .08.

In addition, as shown in Figure 23, *social autonomy* based on scale scores was positively and significantly associated with both *social-oriented motivation* (.31, $p < .001$) and *individual-oriented motivation* (.28, $p < .001$). The standardized path coefficient of *personal autonomy* based on scale scores and *individual-oriented motivation* was positive and statistically significant (.25, $p < .001$). The association between *personal autonomy* and *social-oriented motivation* was not significant.

Based on scenario scores (see Figure 24), *social autonomy* was positively and significantly associated with *social-oriented motivation* (.11, $p < .05$) and *individual-oriented*

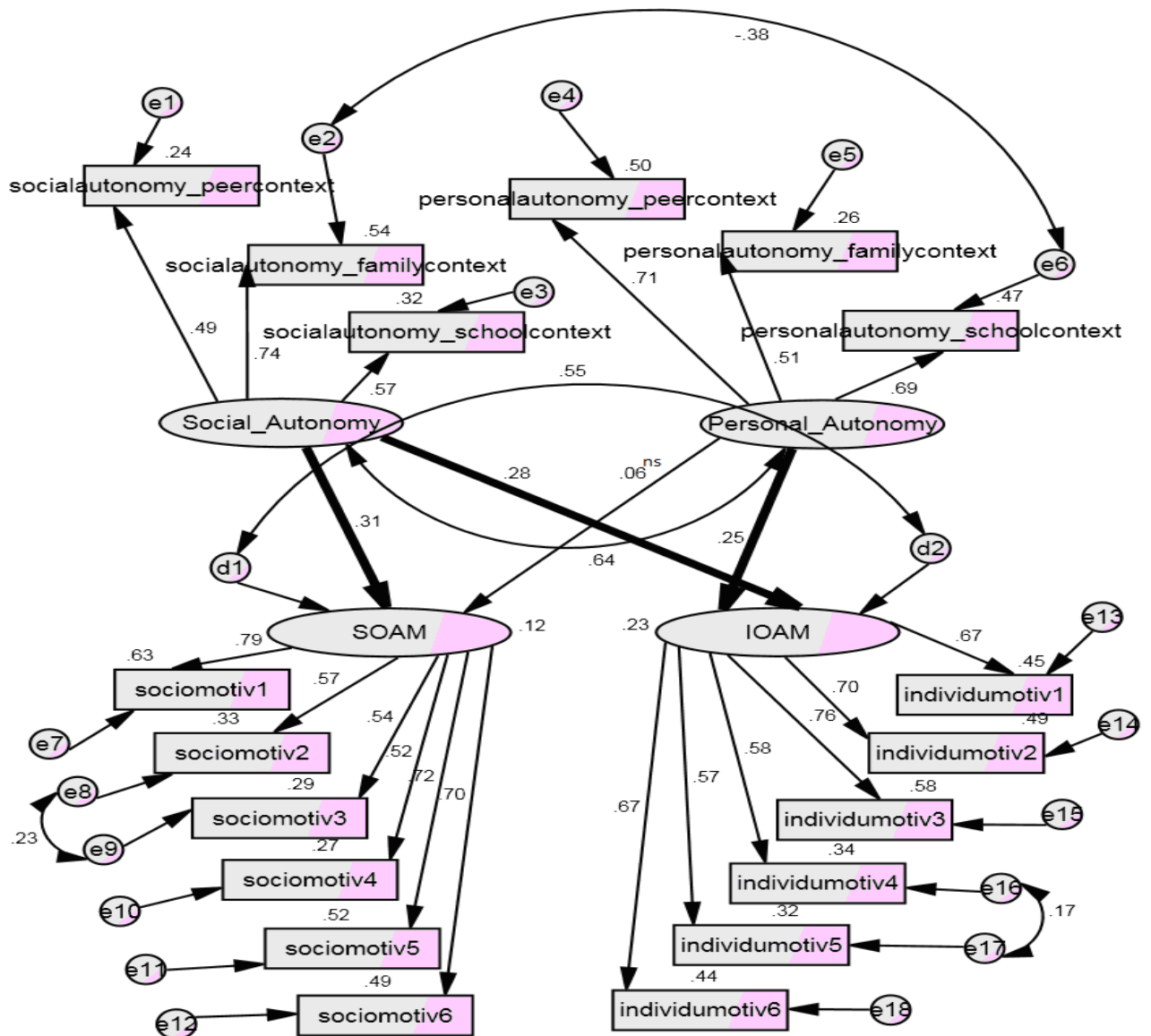


Figure 23 Estimated structural model of autonomy (based on scale scores) and achievement motivation orientations. All standardized estimates above were statistically significant at the .001 level except for those designated “ns”.

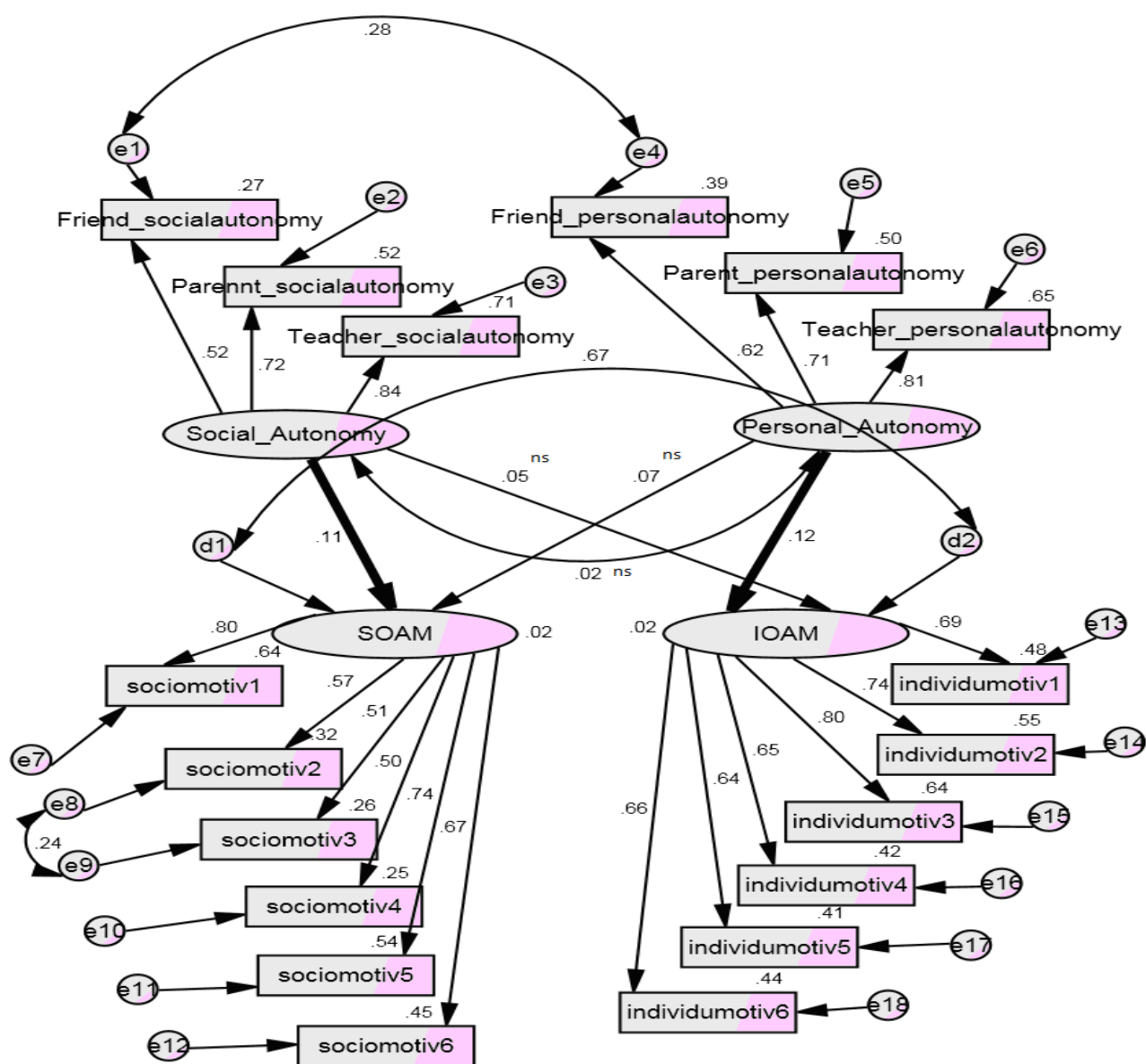


Figure 24 Estimated structural model of autonomy (based on scenario scores) and achievement motivation orientations. All standardized estimates above were statistically significant at either the .001 or .05 level except for those designated “ns”.

motivation was associated with *personal autonomy* (.12, $p < .05$). No other path coefficients were significant.

In summary, largely supporting the hypotheses, the current findings suggested that social autonomy was positively predictive of social-oriented motivation but also of individual-oriented motivation, whereas personal autonomy was positively predictive of individual-oriented motivation.

Relatedness and achievement motivation orientations. The estimated structural models of relatedness and achievement motivation orientations are shown in Figures 25 and 26.

ADF estimations revealed two at least minimally adequate models. For the model based on relatedness scale scores, the $\chi^2_{(126)} = 273.14$, $p < .001$; CFI = .83 ; RMSEA = .05, with 90% confidence interval .04 - .06 and PLOSE of .48. For the model based on relatedness scenario scores, $\chi^2_{(124)} = 206.22$, $p < .001$; CFI = .89; RMSEA = .04, with 90% confidence interval .03 - .05 and PLOSE of .99.

The associations between two forms of relatedness and achievement motivation orientations were relatively weak. In Figure 25, *accommodation* based on scale scores were found to be positively and significantly associated with both *social-oriented motivation* (.62, $p < .01$) and *individual-oriented motivation* (.39, $p < .05$). Other paths were not significant. No path was found to be significant for the scenario scores (see Figure 26).

Gender Differences in the Two Culture-Specific Forms of Autonomy and Relatedness

I conducted four sets of one-way MANOVAs to explore potential sex differences in Chinese adolescents' endorsement of the two forms of autonomy (social vs. personal) and

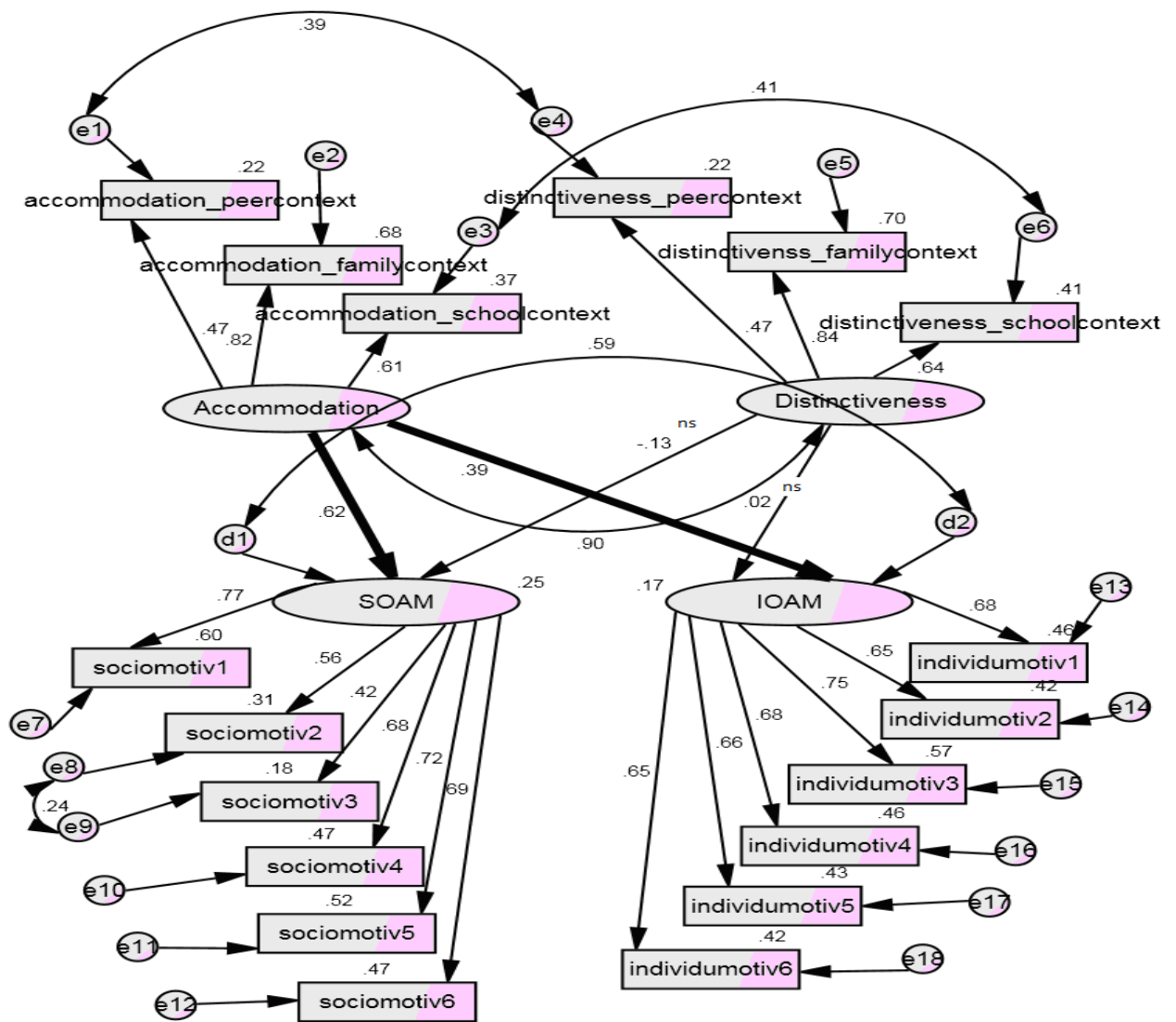


Figure 25 Estimated structural model of relatedness (based on scale scores) and achievement motivation orientations. All standardized estimates above were statistically significant except for those designated “ns”.

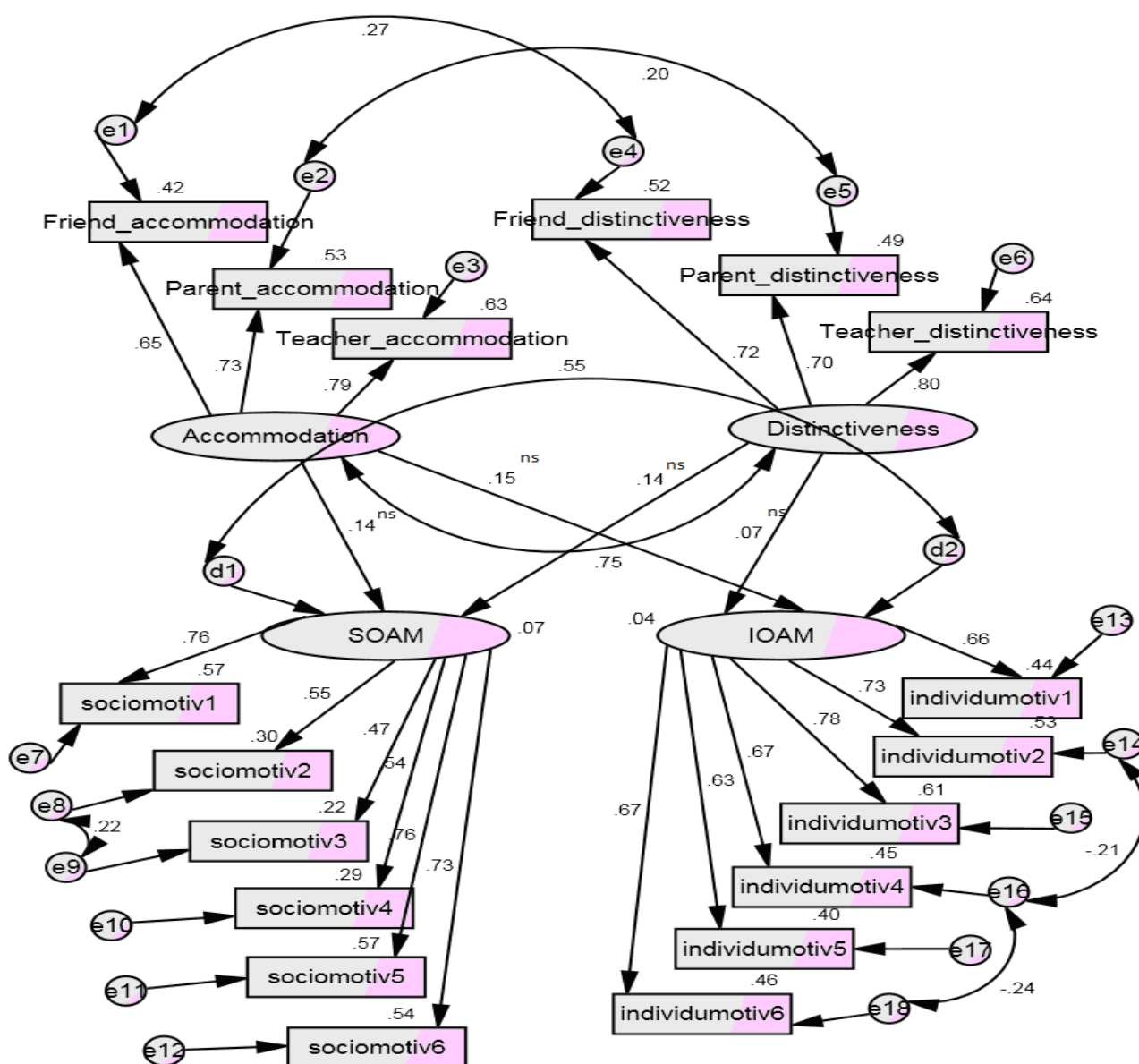


Figure 26 Estimated structural model of relatedness (based on scenario scores) and achievement motivation orientations. All standardized estimates above were statistically significant except for those designated “ns”.

relatedness (accommodation vs. distinctiveness). Each of the four constructs was measured by both scale and scenario scores in three social contexts (peer, family, school).

For autonomy, one set of MANOVAs was conducted using scale scores, in which both social autonomy and personal autonomy in three contexts served as dependent variables. With similar analytical strategy, another set of MANOVAs used autonomy scenario scores. The effect of gender was found to be significant based on scale scores, Wilks' Lambda = .96, $F(6, 416) = 2.97$, $p < .01$. Follow-up analysis revealed a significant effect for personal autonomy in the school context, $F(1, 421) = 6.59$, $p < .05$, with boys ($M = 3.45$) more likely than girls ($M = 3.24$) to endorse personal autonomy while interacting with a teacher. No other sex differences were found.

For relatedness, one set of MANOVAs was conducted with scale scores, in which both accommodation and distinctiveness in three contexts were dependent variables. Again, another set of relatedness MANOVAs was based on scenario scores. There was a significant gender effect based on scenario scores, Wilks' Lambda = .95, $F(6, 309) = 2.88$, $p < .05$. Follow-up analysis revealed a significant effect for accommodation in the school context, $F(1, 314) = 10.49$, $p < .01$, with boys ($M = 2.98$) more likely than girls ($M = 2.59$) to endorse accommodation while interacting with a teacher. No other significant sex effects emerged.

Discussion

In Study 3, I aimed to provide empirical evidence for the proposed two-level (universal and culture-specific) models for both autonomy and relatedness. In general, the current findings lend important support for this proposition for the following reasons.

The culture-specific forms of autonomy and relatedness models were largely supported by the current data. The first-order two-factor measurement models based on scale and scenario

scores consistently confirmed the distinction between personal autonomy and social autonomy. Similarly, first-order measurement models based on both scale and scenario scores indicated that accommodation is distinguishable from distinctiveness.

Further, social autonomy was found to be positively predictive of social-oriented motivation whereas personal autonomy positively associated with individual-oriented motivation in the current study. These findings are thought to be an indication of additional support for the construct validity of the two culture-specific forms of autonomy. However, it should be noted that, unexpectedly, social autonomy scale scores were also positively predictive of individual-oriented motivation. Similarly, accommodation based on scale scores was positively associated with both achievement motivation orientations. Why might that be case? It is possible that in Chinese youth, social autonomy may be a necessary precursor of achieving a sense of personal autonomy. In a similar vein, those youth may endorse distinctiveness, providing that they have achieved accommodation. However, this explanation needs future confirmation.

The existence of universal vs. culture-specific *levels* of autonomy and relatedness also gained support in two ways. On the one hand, as reported in Study 1, the autonomy and relatedness groupings (universal and culture-specific forms) based on the theoretical frameworks had very good inter-rater agreement. Further, the autonomy and relatedness categories were refined in Study 2. In Study 3, after further conceptual analysis on the autonomy and relatedness items, those items selected to represent universal, as well as culture-specific, forms of autonomy and relatedness, demonstrated face validity. For example, the item “I stand up for my actions while interacting with friends” is consistent with the *universal autonomy* definition that refers to the extent to which individuals fully accept, endorse, and/or stand behind their beliefs and actions, with a sense of agency. “I have freedom of choice while interacting with friends” taps

the construct of *personal autonomy*, which is defined in the current research as volitional actions on behalf of the individuals' own interests, goals, and/or motivations. Similarly, "My friends and I are caring and warm to each other" fits within the framework of *universal relatedness* -felt connectedness/closeness to others. "My parents and I always adjust ourselves to each other" corresponds to valuing similarity between self and others that is central to *accommodation*.

On the other hand, the second-order autonomy measurement model based on scale scores and the second-order relatedness measurement models based on both scale and scenario scores, suggest the possibility of universal, as well as culture-specific, levels of these two constructs. That is, the culture-specific forms of autonomy (personal autonomy and social autonomy)/relatedness (accommodation and distinctiveness), although distinguished from each other, may be driven by a common underlying mechanism that operates across cultures/ethnic groups.

To conclude, the current findings are thought to provide important empirical support for the proposed two-level (universal and culture-specific) models of both autonomy and relatedness. However, replications are needed and caution should be taken in interpreting the results.

References

- Bao, X., & Lam, S. (2008). Who makes the choice? Rethinking the role of autonomy and relatedness in Chinese children's motivation. *Child Development*, 79(20), 269-283. doi: 10.1111/j.1467-8624.2007.01125.x
- Byrne, B. M. (2010). *Structural equation modeling with AMOS: Basic concepts, applications, and programming* (2nd ed.). New York: Taylor & Francis Group.
- Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin*, 56(2), 81-105.
- Chan, J. (2002). Moral autonomy, civil liberties, and Confucianism. *Philosophy East and West*, 52(3), 281-310.
- Chen, F., Bollen, K. A., Paxton, P., Curran, P. J., & Kirby, J. B. (2001). Improper solutions in structural equation models: Causes, consequences, and strategies. *Sociological Methods and Research*, 29, 468-508.
- Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological Bulletin*, 52(4), 281-302.
- Eccles, J. S., & Midgley, C. (1989). Stage-environment fit: Developmentally appropriate classrooms for early adolescents. In R. E. Ames & C. Ames (Eds.), *Research on motivation in education: Goals and cognitions* (vol. 3, pp. 13-44). New York: Wiley.
- Furr, C., & Skinner, E. (2003). Sense of relatedness as a factor in children's academic engagement and performance. *Journal of Educational Psychology*, 95(1), 148-162.
- Hollander, E. P. (1975). Independence, conformity, and civil liberties: Some implications from social psychological research. *Journal of Social Issues*, 31(2), 55-67. doi: 10.1111/j.1540-4560.1975.tb00759.x

- Hui, E. K. P., Sun, R. C. F., Chow, S. S., & Chu, M. H. (2011). Explaining Chinese students' academic motivation: Filial piety and self-determination. *Educational Psychology: An International Journal of Experimental Educational Psychology*, 31(3), 377-392. doi: 10.1080/01443410.2011.559309
- Kenny, D. A. (1979). *Correlation and causality*. New York: Wiley.
- Kenny, D. A., & Kashy, D. A. (1992). Analyses of the multitrait-multimethod matrix by confirmatory factor analysis. *Psychological Bulletin*, 112, 165-172.
- Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York: The Guilford Press.
- Little, T. D., Cunningham, W. A., Shahar, G., & Widaman, L. F. (2002). To parcel or not to parcel: Exploring the questions, weighing the merits. *Structural Equation Modeling*, 9(2), 151-173.
- Marida, K.V. (1970). Measures of multivariate skewness and kurtosis with applications. *Biometrika*, 57, 519-530.
- Marida, K.V. (1974). Measures of multivariate skewness and kurtosis in testing normality and robustness studies. *Sankhya*, B36, 115-128.
- Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, 98(2), 224-253. doi: 10.1037/0033-295X.98.2.224
- Noon, M. J., Dekovic, M., & Meeus, W. (2001). Conceptual analysis and measurement of adolescent autonomy. *Journal of Youth and Adolescence*, 30 (3), 577-595.
- Ryan, R.M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American psychologist*, 55, 68-78. doi: 10.1037/0003-066X.55.1.68

- Shafer, J. L. & Granham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods*, 7(2), 147-177. doi: 10.1037/1082-989X.7.2.147
- van Prooijen, J. W., & van der Kloot, W. A. (2001). Confirmatory analysis of exploratively obtained factor structures. *Educational and Psychological Measurement*, 61, 777-792.
- Yang, K. (1982b). Yuan and its function in modern Chinese life. In *Proceedings of the Conference on Traditional Culture and Modern Life* (pp.103-128). (In Chinese).
- Yang, K. (1986). Chinese personality and its change. In M. H. Bond (Ed.), *The psychology of the Chinese people* (pp.106-170). HongKang: Oxford University Press.
- Yang, K., & Liang, W. (1973). Some correlates of achievement motivation among Chinese high school boys. *Acta Psychologica Taiwanica*, 15, 59-67. (In Chinese).
- Yang, C., Nay, S., & Hoyle, R. H. (2010). Three approaches to using lengthy ordinal scales in structural equation models: Parceling, latent scoring, and shortening scales. *Applied Psychological Measurement*, 34 (2), 122-142. doi: 10.1177/0146621609338592
- Yu, A. (1996). Ultimate life concerns, self, and Chinese achievement motivations. In M. H. Bond (Ed.), *The Handbook of Chinese Psychology* (pp.227-246).
- Yu, A., & Yang, K. (1989). Social-oriented and individual-oriented achievement motivation: A conceptual and empirical analysis. *Bulletin of the Institute of Ethnology Academia Sinica*, 64, 51-98. (In Chinese).

Chapter 5: General Discussion and Conclusions

In many theoretical frameworks, including self-determination (Deci & Ryan, 1985; Ryan & Deci, 2000), ego (Erikson, 1950), and attachment (Ainsworth, 1976; Bowlby, 1969/1982, 1973) theories, demonstrating both *autonomy* and *relatedness* especially in adolescence has been a fundamental developmental task (e.g., Blos, 1979; Grotevant & Cooper, 1985; Moore, 1987; Steinberg, 1990). However, the assumed universality of autonomy and relatedness tenet has not been adequately tested in non-Western cultures, such as China, in which the relevance of Western conceptualizations of autonomy and relatedness to Chinese youth remains a controversy.

As an attempt to resolve this problem, I proposed and empirically validated a two-level (*universal* and *culture-specific*) model for both autonomy and relatedness by conducting three studies. In this general discussion, I aim to provide a broad picture of the two-level models, in terms of the extent to which they are supported by the current data and the theoretical implications of these findings. Then, issues concerning the autonomy and relatedness measures are discussed, followed by a consideration of contextual and sex differences in Chinese adolescents' endorsement of various forms of autonomy and relatedness. Next, I highlight some strengths and potential practical implications of the current research. This discussion ends with a section outlining limitations and future research directions.

The Two-Level Models of Autonomy and Relatedness

Throughout the three studies, the existence of universal, as well as culture-specific forms of autonomy and relatedness, were examined by conducting both conceptual and empirical analyses. As expected, the current data largely support the proposed two-level models. These findings have important theoretical implications.

Consistent with the “universality without uniformity” perspective (Shweder & Sullivan, 1993), the potentially culture-specific forms of autonomy and relatedness that emerged in the current research may help address the existing gap between the theoretical universality of autonomy and relatedness as basic human needs and the empirical results indicating cultural relativity in youth development (e.g., Wang et al., 2007; Qin et al., 2009). Indeed, there has been a recent call to bridge universal and cultural perspectives in developmental psychology (Jensen, 2012). Thus, it is an important task for psychologists to expand on the existing theories with possible cultural specificity. Thus far, unfortunately, not much has been done in this direction. Keller (2012) has recently proposed an individual vs. communal model of autonomy. However, the current research, to my knowledge, is the first to provide empirical evidence to validate a similar conceptualization. Given this context, this investigation of both universal and culture-specific parts of autonomy and relatedness makes an important contribution to the field of developmental psychology in general, and autonomy and relatedness in particular.

Although the current research provides important support for the propositions that culture-specific forms of autonomy (social vs. personal) and relatedness (accommodation vs. distinctiveness) are distinctive concepts, the positive correlations within autonomy and relatedness, especially those based on scale scores, were relatively high. What do the high correlations mean? Indeed, the most straightforward explanation could be that the two forms of autonomy and relatedness each have their common direct causes (the universal levels), which presumably account for the correlations among the first-order factors.

Further, as contended by Tamis-LeMonda et al. (2008), cultural values and developmental goals that are seemingly conceptual opposites can be functionally dependent or additive. To apply these two forms of coexistence to the case of autonomy and relatedness, it

seems that *personal* autonomy could be achieved through a developmental path of *social* autonomy (functionally dependent), as suggested in the associations between the two forms of autonomy and achievement motivation orientations.

For relatedness, correlations of this size may be an indication that Chinese youth who have developed relatedness endorse both culture-specific forms without specific directionality between these two (additive). This fits well with the “integrative syntheses” model (Kagitcibasi, 1996a, 2007, 2012), in which a balanced combination of two developmental endpoints seen as incompatible may emerge in response to social and cultural changes. For contemporary Mainland Chinese adolescents, endorsing diverse forms of autonomy and relatedness may be a result of their exposure to both traditional Chinese culture and Western ideologies.

However, the developmental implications of valuing both forms of relatedness are uncertain. Two conflicting perspectives in the literature of acculturation offer two possibilities. The assimilation or culturally deficit model (Gorden, 1964; Senn, 1975) suggests that the different or conflicting cultural values and expectations that immigrant children hold may lead to maladaptive adjustment.

Chinese adolescents who are high on both forms of relatedness are expected to function worst, in terms of social and emotional adaptation. In the pluralist-constructivist model of acculturation (e.g., Cozen, Gerber, Morawska, Pozzetta, & Vecoli, 1992; Zhou, 1997), in contrast, ethnicity and mixed cultural backgrounds are considered resources for adaptive development. In line with this model, Chinese youth who are high on both forms of relatedness could function best. Future research is needed to test the above speculations.

Measurement: Scales vs. Scenarios

As outlined in the introductory chapter, a second goal of the current research program was to develop reliable and valid measures of autonomy and relatedness. Moreover, the existing measures of autonomy and relatedness do not seem to fit adequately the proposed universal, as well as culture-specific, theoretical models. The measures developed in the current research are thought to be relatively reliable and valid tools that can be used in future research. For example, measures of the two culturally specific forms of autonomy and relatedness can be used to explore potential ethnic or SES differences (e.g., youth from families of middle- vs. lower-class) within a culture, in the two forms. Again, both the universal and culture-specific measures can be used cross-culturally to assess cultural similarities and differences in autonomy and relatedness that, in turn, may help further credit (or discredit) the usefulness of the measures developed.

However, one important issue warrants further consideration, specifically, the relative utility of the scales vs. scenarios (i.e., the two sets of autonomy and relatedness measures). Which ones seem to better capture the constructs of culture-specific levels of autonomy and relatedness? Although an excellent approach to accounting for or separating potential method effects, a notable drawback of the multitrait-multimethod (MTMM) models is their high rate of yielding improper solutions or empirical underidentification (e.g., Marsh & Bailey, 1991; Wothke, 1996). Unfortunately, the current models demonstrated these problems. No effective strategies seem to be in place to avoid these problems.

The current data seem to suggest that, in general, the scale measures of autonomy and relatedness may be more valid than the scenarios. First, the *interdependent self* vs. *independent self* a priori criteria may be conceptually too broad to guide the generation of scenarios implicating culture-specific forms of autonomy and relatedness. For example, it can be confounding to use one single scenario to assess both social autonomy and accommodation, and

another to assess both personal autonomy and distinctiveness. Indeed, across three studies the first-order correlation matrices indicated moderate correlations between accommodation and social autonomy across the three social contexts, suggesting that these two constructs may be somewhat confounding each other.

Second, the relative lack of construct validity of these scenarios was also indirectly evidenced in the low correlations for a given culture-specific form of autonomy or relatedness, as assessed by scales vs. scenarios. The low correlations may imply that the two types of measures may not be able to capture the same intended construct. These low intercorrelations also could explain in part, at least, why the measurement models estimation within each of three social contexts were not successful, as well as the MTMM models estimation failures.

Conceptually, a universal level underlies the two culture-specific forms of autonomy and relatedness. The independence of social autonomy and personal autonomy revealed in the two-factor autonomy measurement model based on scenario scores suggests that these scenarios may not fit well with the theoretical propositions. Again, the lack of associations between culture-specific forms of relatedness based on scenario scores and achievement motivation orientations may suggest that the relatedness scenarios fail to involve the two forms (accommodation and distinctiveness). However, these speculations need future confirmation.

To modify the scenarios in future research, it would be helpful to select examples from scale items developed in the current research. For example, “I have freedom of choice while interacting with friends/parents/teacher” may be rephrased into a story reflecting personal autonomy while “I act on my friends/parents/teacher’s expectations on me” may be used to create a story reflecting social autonomy. Similarly, “My friends/parents/teacher and I always adjust to each other” may be used to elicit a sense of accommodation while “My

friends/parents/teacher and I are open to and respect for each other's views" may serve to elicit a sense of distinctiveness.

A final note on the measurement of autonomy and relatedness is that some caution should be exercised with respect to the autonomy and relatedness scale measures. There are no reversed items included in the final sets of autonomy and relatedness items. This is a result of both conceptual and empirical analyses on those items, rather than of design. The primary goal of generating negatively keyed questions/items of autonomy and relatedness in Studies 1 and 2 was to reduce potential acquiescence bias in Study 3. To be considered qualified for such reversed items, those obtained "negative" items had to meet two conditions. One was that they were thought to be relevant to not feeling autonomous or connected to others, as indicated by their relatively high mean scores. Another condition was that those items were supposed to be either the positive items' own negation or their conceptual opposites, since feeling autonomous/close to others and *not* feeling autonomous/close to others were conceptualized as relative and as reflecting a continuum of autonomy and relatedness.

As the individualism vs. collectivism dichotomy has been criticized (e.g., Rhee, Uleman, & Lee, 1995; Tamis-LeMonda et al., 2008; Triandis, 1995), the current findings raise a point that "feeling autonomous or connected/close" may not be the opposite of "not feeling autonomous or connected/close". Instead, these two sets of statements may be conceptually independent and/or are each multidimensional. Future research should continue to focus on refining the conceptual clarity of *feeling autonomous or connected/close* and *not feeling autonomous or connected/close*.

As described in Study 3, several autonomy (e.g., "I get what I want/need") and relatedness (e.g., "My friends/parents and I always confide in each other") items were dropped to make the items across three social contexts identical. Thus, in both autonomy and relatedness

scales, the number of items included in each of the autonomy and relatedness categories was relatively small, which may somewhat undermine both the content validity and the internal consistency reliabilities of those measures. In future research, we may retain more of the autonomy and relatedness scale items derived from Study 1 descriptors.

Lastly, in both Studies 2 and 3, responses to the autonomy items could have been assessed by a rating scale, as well as followed-up questions (e.g., written open-ended questions or a qualitative interview) probing justifications/rationale for ratings the participants had provided. This additional information can help further validate whether Chinese adolescents' responses to the rating scale were relevant to their sense of autonomy. For example, a behavioural descriptor such as "helping" could have a number of reasons and motivations behind it. Accordingly, some participants' reasoning may correspond to their autonomous feeling (e.g., "Helping others is part of who I am") and other reasoning (e.g., "Helping is something that happens") may not.

Contextual Variations in Autonomy and Relatedness

Interestingly, the current data largely suggest that Chinese youth's conceptions of autonomy and relatedness are moderately consistent across three social contexts of peer, family, and school. This is somewhat inconsistent with the literature on Chinese adolescents' sensitivity to social contexts in their social judgments and reasoning (e.g., Helwig et al., 2003). This discrepancy may be attributed to the fact that although there is a conceptual connection between social judgments about decision making and autonomy, these two constructs are distinguishable. Thus, it is possible that the non-context specific pattern of Chinese youth's endorsement of autonomy could be different than that of social judgment, which reflects the domain-specificity in individuals' development of social and psychological constructs (e.g., Turiel, 1983).

Instead, the mechanism of endorsing autonomy and relatedness may be similar to one's attachment security that has been seen as transferrable across contexts (e.g., Bowlby, 1969/1982; van IJzendoorn, Sagi, & Lambermon, 1992). For example, as established in the attachment literature, children's sense of relatedness to peers, to parents, and to teachers have been found to be positively correlated with each other (e.g., Furr & Skinner, 2003). However, the contextual variability in autonomy and relatedness needs future investigation.

Sex Differences in Autonomy and Relatedness

Across the three studies, there was an overall lack of sex differences in Chinese adolescents' endorsement of autonomy and relatedness. In Study 3 only, boys tended to endorse personal autonomy and accommodation in school more than did girls. These findings may suggest an emerging sign of gender equality in important developmental domains.

The current findings may also confirm the speculation that millennial Mainland Chinese boys and girls in some ways are being exposed to almost the same social and physical worlds. Further, given that more than half of the youth in the current samples were of only-child status, the traditional way of favoring boys over girls in social life (Ho, 1986, 1987) may no longer be the case. Rather, the families, school, and the society as a whole may place equal expectations on the children in socializing them with important social values and behaviors, regardless of their gender. The long-term developmental implications for both boys and girls merit future follow-ups, given the long history of the hierarchical Chinese social structures in which females had always been in a disadvantaged position and males in the opposite.

Strengths and Practical Implications

Methodologically, this research program was conducted with a rather novel approach to exploring the psychological constructs (e.g., Barber et al., 2012; Xu et al., 2008) of autonomy and relatedness: a combination of qualitative and quantitative phases.

More specifically, in the qualitative phase (reported in Study 1), I probed for information on specific forms of autonomy and relatedness that may be culturally distinctive by providing participants with underlying frameworks of both constructs in the questionnaire booklet. This strategy has the advantage of taking the target groups' own perspectives into account, as well as maximizing the relevance of the participants' responses to the questions. Thus, findings derived from this stage represent a crucial initial step in developing valid measures of specific forms of autonomy and relatedness.

In the quantitative phase (reported in Studies 2 and 3), the universal vs. culture-specific level of autonomy and relatedness were tested with second-order CFA models, in which the universal autonomy and relatedness were specified as the higher order factors and culture-specific forms as first-order factors to examine the hierarchical relations between universal and culture-specific forms of autonomy and relatedness.

In addition to the theoretical implications of the two-level autonomy and relatedness models, an understanding of both universal and potentially culture-specific forms would have practical implications. For example, recent literature on Chinese parenting has suggested well-educated parents are likely practicing some aspects of parenting in Western ways (e.g., Chen, Rubin, & Li, 1994; Lai, Zhang, & Wang, 2000; Wu, 1996). An awareness of what Western conceptualizations of autonomy and relatedness actually mean to both parents and children may foster the effectiveness of such parenting. Further, in some culturally diverse societies, such as the US, multicultural education advocates design their program in a way that addresses cultural

differences in content and form (e.g., see Ogbu, 1992, for a review). Culturally responsive practices in schools and classrooms have been found to be effective in reducing the achievement gap among students with different ethnic backgrounds (e.g., Griner & Stewart, 2013). The notion of appreciating cultural similarities and differences in autonomy and relatedness can be integrated into such educational practice.

Limitations and Future Research Directions

Several limitations should be noted, which point to future research directions. For example, the current samples were drawn from Chinese adolescents whose parents are of relatively low education. Thus, generalization of the current findings to the whole population of Mainland Chinese youth should be made with caution. Even further, no cross-validation of the models was conducted in the current research, although multiple samples were used. It would be optimal to replicate the current models with independent samples from the same population (e.g., Byrne, 2010).

Moreover, participants in the current research program were recruited from only Mainland China. Although this noncomparative sampling strategy can answer research questions with cultural considerations (e.g., Miller, 2004), testing culturally sensitive questions/hypotheses with diverse cultural/ethnic groups could better establish the cross-cultural validity of both the constructs and the measurement (e.g., van de Vijver & Leung, 1997). With direct cross-cultural comparisons, we may be able to see whether the presumably “culture-specific” forms of autonomy (social autonomy vs. personal autonomy) and relatedness (accommodation vs. distinctiveness) are indeed culturally dependent or both forms exist universally but the degree to which each is prioritized may vary across cultures.

Again, the current findings, especially those with respect to the culturally-specific forms of autonomy and relatedness, are preliminary in nature. Thus, it is necessary to further confirm the construct validity of the culture-specific forms by alternative tools, such as experimental techniques. Indeed, priming procedures have been applied to cultural phenomena (e.g., Chua, Boland, & Nisbett, 2005). Borrowing from these ideas, information on two forms of autonomy and relatedness could be primed and researchers then could see if predictive changes in some variables, such as achievement motivation orientations and/or behaviour, would occur.

Conclusions

To conclude, despite several limitations and a need for further replication and validation, this research program makes an important contribution to the fields of both developmental psychology in general and autonomy and relatedness in particular. That is, two-level models of both autonomy and relatedness were proposed and gained initial empirical support. Also, a relatively reliable and valid measurement of universal, as well as culture-specific, forms of both constructs emerged out of the current research. Finally, these theoretical models have implications for socialization and education practice.

References

- Barber, B. K., Xia, M., Olsen, J. A., McNeely, C. A., & Bose, K. (2012). Feeling disrespected by parents: Refining the measurement and understanding of psychological control. *Journal of Adolescence*, 35, 273-287.
- Blos, P. (1979). *The adolescent passage*. New York: International Universities Press.
- Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation: Anxiety and anger*. New York: Basic Books.
- Bowlby, J. (1982). *Attachment and loss: Vol. 1. Attachment*. New York: Basic Books (Original work published 1969).
- Byrne, B. M. (2010). *Structural equation modeling with AMOS: Basic concepts, applications, and programming* (2nd ed.). New York: Taylor & Francis Group.
- Chen, X., Rubin, K. H., & Li, B. (1994). Only children and sibling children in urban China: A reexamination. *International Journal of Behavioural Development*, 17, 413-421.
- Cozen, K. N., Gerber, D. A., Morawska, E., Pozzetta, G. E., & Vecoli, R. J. (1992). The invention of ethnicity: A perspective from the U.S.A. *Journal of American Ethnic History*, 11, 3-41.
- Chua, H. F., Boland, J. E., & Nisbett, R. E. (2005). Cultural variation eye movements during scene perception. *Proceedings of the National Academy of Science of the USA*, 102, 12969-12633.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum Press.

- Erikson, E. H. (1950). Growth and crises of the "healthy personality." In M. J. E. Senn (Ed.), *Symposium on the healthy personality* (pp. 91-146). Oxford, England: Josiah Macy, Jr. Foundation.
- Furr, C., & Skinner, E. (2003). Sense of relatedness as a factor in children's academic engagement and performance. *Journal of Educational Psychology*, 95(1), 148-162.
- Griner, A. C., & Stewart, M. L. (2013). Addressing the achievement gap and disproportionality through the use of culturally responsive teaching practices. *Urban Education*, 48 (4), 585-621.
- Gordon, M. M. (1964). *Assimilating in American life: The role of race, religion, and national Origins*. New York: Guilford Press.
- Grotevant, H. D., & Copper, C. R. (1985). Patterns of interaction in family relationships and the development of identity exploration in adolescence. *Child development*, 56, 415- 428.
- Helwig, C. C., Arnold, M. L., Tan, D., & Boyd, D. (2003). Chinese adolescents' reasoning about democratic and authority-based decision making in peer, family, and school contexts. *Child Development*, 74(3), 783-800. doi: 10.1111/1467-8624.00568
- Ho, D.Y. F. (1986). Chinese patterns of socialization: A critical review. In M. H. Bond (Ed.), *The psychology of the Chinese people* (pp. 1-35). Hong Kong: Oxford University Press.
- Ho, D. Y. F. (1987). Fatherhood in Chinese culture. In M. E. Lamb (Ed.), *The father's role: Cross-cultural perspectives*. Hills-dale, NJ: Erlbaum.
- Jensen, L. A. (2012). Bridging universal and cultural perspectives: A vision for developmental psychology in a global world. *Child Development Perspectives*, 6(1), 98-104.
doi: 10.1111/j.1750-8606.2011.00213.x

- Kagitcibasi, C. (1996a). *Family and human development across Cultures: A view from the other side*. Hillsdale, NJ: Erlbaum.
- Kagitcibasi, C. (2007). *Family, self, and human development across cultures: Theories and applications*. Mahwah, NJ: Erlbaum.
- Kagitcibasi, C. (2012). Sociocultural change and integrative syntheses in human development: Autonomous-related self and social-cognitive competence. *Child Development Perspectives*, 6 (1), 5 -11. doi: 10.1111/j.1750-8606.2011.00173.x
- Keller, H. (2012). Autonomy and relatedness revisited: Cultural manifestations of universal human needs. *Child Development Perspectives*, 6 (1), 12-18. doi: 10.1111/j.1750-8606.2011.00208.x
- Lai, A. C., Zhang, Z., & Wang, W. (2000). Maternal child-rearing practices in Hong Kong and Beijing Chinese families: A comparative study. *International Journal of Psychology*, 35, 60-66.
- Marsh, H. W., & Bailey, M. (1991). Confirmatory factor analysis of multitrait-multimethod data: A comparison of alternative models. *Applied Psychological Measurement*, 15, 47-70.
- Miller, J. G. (2004). Culturally sensitive research questions and methods in social psychology. In C. Sansone, C. C. Morf & A. T. Panter (Eds.), *The sage handbook of methods in social psychology* (pp. 93-116). Thousand Oaks: Sage Publications.
- Moore, D. (1987). Parent-adolescent separation: The construction of adulthood by late adolescents. *Developmental Psychology*, 23, 298-307. doi: 10.1037/0012-1649.23.2.298
- Ogbu, J. U. (1992). Understanding cultural diversity and learning. *Educational Researcher*, 21(8), 5-14. doi: 10.3102/0013189X021008005

- Qin, Li., Pomerantz, E. M., & Wang, Q. (2009). Are gains in decision- making autonomy during early adolescence beneficial for emotional functioning? The case of the United States and China. *Child Development*, 80(6), 1705-1721. doi: 10.1111/j.1467-8624.2009.01363.x
- Rhee, E., Uleman, J. S., & Lee, H. K. (1996). Variations in collectivism and individualism by in-group and culture: Confirmatory factor analyses. *Journal of Personality and Social Psychology*, 71, 1037-1054.
- Ryan, R.M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American psychologist*, 55, 68-78. doi: 10.1037/0003-066X.55.1.68
- Senn, M. (1975). Insights on the child development movement. *Monographs of the Society for Research in Child Development*, 40(3-4, Serial No. 161).
- Shweder, R., & Sullivan, M. (1993). Cultural psychology: Who needs it? *Annual Review of Psychology*, 44, 497-523. doi: 10.1146/annurev.ps.44.020193.002433
- Steinberg, L. (1990). Interdependence in the family: Autonomy, conflict, and harmony in the parent-adolescent relationship. In S. Fieldman & G. Elliott (Eds.), *At the threshold: The developing adolescent* (pp.54-89). Cambridge, MA: Harvard University Press.
- Tamis-LeMonda, C. S., Way, N., Hughes, D., Yoshikawa, H., Kalman, R. K., & Niwa, E. Y. (2008). Parents' goals for children: The dynamic coexistence of individualism and collectivism in cultures and individuals. *Social Development*, 17(1), 183-209.
- Triandis, H.C. (1995). *Individualism and collectivism*. Boulder, CO: Westview Press.
- Turiel E. (1983). *The development of social knowledge: Morality' and convention*. Cambridge, UK: Cambridge University Press.

- van de Vijver, F. J. R., & Leung, K. (1997). *Methods and data analysis for cross-cultural research*. Newbury Park, CA: Sage.
- van Uzendoorn, M. H., Sagi, A., & Lambermon, M. W. E. (1992). The multiple caretaker paradox: Data from Holland and Israel. *New Directions for Child Development*, 57, 5-24.
- Wang, Q., Pomerantz, E. M., & Chen, H. (2007). The role of parents' control in early adolescents' psychological functioning: A longitudinal investigation in the US and China. *Child Development*, 78(5), 1592-1610. doi: 10.1111/j.1467-8624.2007.01085.x
- Wothke, W. (1996). Models for multitrait-multimethod matrix analysis. In G. A. Marcoulides & R. E. Schumacker (Eds.), *Advanced structural equation modeling* (pp. 195-226). Mahwah, NJ: Erlbaum.
- Wu, D. Y. H. (1996). Chinese childhood socialization. In M. H. Bond (Ed.), *The handbook of Chinese Psychology* (pp. 143-154). HongKong: Oxford University Press.
- Xu, Y., Farver, J. A., Yang, Y., & Zeng, Q. (2008). Chinese children's conceptions of shyness: A prototype approach. *Merrill-Palmer Quarterly*, 54(4), 515-544.
- Zhou, M. (1997). Growing up American: The challenge confronting immigrant children and children of immigrants. *Annual Review of Sociology*, 23, 63-95.

Appendix A: Ethics Clearance Form_1

Social Science Research Ethics Board

Certificate of Ethics Clearance for Human Participant Research

DATE: August 5, 2011

PRINCIPAL INVESTIGATOR: ROSE-KRASNOR, Linda - Psychology

FILE: 10-232 - ROSE-KRASNOR

TYPE: Ph. D. STUDENT: Junru Zhao
 SUPERVISOR: Linda Rose-Krasnor

TITLE: What Chinese Youth Think About Decision Making and Relationships

ETHICS CLEARANCE GRANTED

Type of Clearance: MODIFICATION Expiry Date: 4/30/2012

The Brock University Social Sciences Research Ethics Board has reviewed the above named research proposal and considers the procedures, as described by the applicant, to conform to the University's ethical standards and the Tri-Council Policy Statement. Clearance granted from **8/5/2011** to **4/30/2012**.

The Tri-Council Policy Statement requires that ongoing research be monitored by, at a minimum, an annual report. Should your project extend beyond the expiry date, you are required to submit a Renewal form before **4/30/2012**. Continued clearance is contingent on timely submission of reports.

To comply with the Tri-Council Policy Statement, you must also submit a final report upon completion of your project. All report forms can be found on the Research Ethics web page at <http://www.brocku.ca/research/policies-and-forms/research-forms>.

In addition, throughout your research, you must report promptly to the REB:

- a) Changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
- b) All adverse and/or unanticipated experiences or events that may have real or potential unfavourable implications for participants;
- c) New information that may adversely affect the safety of the participants or the conduct of the study;
- d) Any changes in your source of funding or new funding to a previously unfunded project.

We wish you success with your research.

Approved:

 Jan Frijters, Chair
 Social Sciences Research Ethics Board

Note: Brock University is accountable for the research carried out in its own jurisdiction or under its auspices and may refuse certain research even though the REB has found it ethically acceptable.

If research participants are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and clearance of those facilities or institutions are obtained and filed with the REB prior to the initiation of research at that site.

Appendix B: Study 1 Questionnaire Booklet**“What Chinese Youth Think about Autonomy and Relatedness” Project****Questionnaire Booklet****Brock University
(Canada)****Name**_____**Age**_____**Gender**_____**Grade**_____**School**_____**Head teacher**_____**Parental occupation/education**_____

Instructions: We are studying Chinese adolescents' beliefs about autonomy and relatedness, as achieving autonomy while maintaining relatedness to people who are important to you has been seen as a critical task of adolescence. Now we have some questions for you to answer.

Before you start we want to remind you of several things as follows:

1. This is not a test and has nothing to do with your school work. Please don't be nervous.
2. There is no right or wrong answers to any of the questions, as we are just interested in your ideas. Please don't discuss with your peers about your answers.
3. If there is **ANY** question that you don't understand, please raise your hands to let the research associate know so he/she can clarify for you.

Any more questions? You can start now!

PART ONE

Autonomy is important to everyone as feeling autonomous helps one stay psychologically healthy. Autonomy refers to acting in a way that is true to one's beliefs or values. In other words, one's actions are volitional or one accepts, endorses, and/or stands behind his/her actions. Right now, we are really interested in how youth of your age think about *autonomy* or *feeling autonomous*.

Questions:

a. Think about a time when you were interacting with your **friends and you felt very autonomous.**

(1) In the space below, please explain what happened at that time:

(2) What was it about that situation that made you feel autonomous?

Again, think about a time when you were interacting with your **friends** and you **did not** feel autonomous at all.

(1) In the space below, please explain what happened at that time:

(2) What was it about that situation that did not make you feel autonomous?

b. Think about a time when you were interacting with your **parents and you felt very autonomous.**

(1) In the space below, please explain what happened at that time:

(2) What was it about that situation that made you feel autonomous?

Again, think about a time when you were interacting with your **parents** and you **did not** feel autonomous at all.

(1) In the space below, please explain what happened at that time:

(2) What was it about that situation that did not make you feel autonomous?

c. Think about a time when you were interacting with your **teacher** and you felt very autonomous.

(1) In the space below, please explain what happened at that time:

(2) What was it about that situation that made you feel autonomous?

Again, think about a time when you were interacting with your **teacher** and you **did not** feel autonomous at all.

(1) In the space below, please explain what happened at that time:

(2) What was it about that situation that did not make you feel autonomous?

PART TWO

Questions:

a. Think about a time when you were with your **friends** and you felt very close or connected to them.

(1) In the space below, please explain what happened at that time:

(2) What was it that made you feel close or connected to your friends?

Again, think about a time when you were with your **friends** and you **did not** feel close to them at all.

(1) In the space below, please explain what happened at that time:

(2) What was it that did not make you feel close or connected to your friends?

b. Think about a time when you were with your parent(s) and you felt very close or connected to them.

(1) In the space below, please explain what happened at that time:

(2) What was it that made you feel close or connected to your parent(s)?

Again, think about a time when you were with your **parent(s)** and you **did not** feel close to them at all.

(1) In the space below, explain what happened at that time:

(2) What was it that did not make you feel close or connected to your parent(s)?

c. Think about a time when you were with your teacher and you felt very close or connected to him/her.

(1) In the space below, explain what happened at that time:

(2) What was it that made you feel close or connected to your teacher?

Again, think about a time when you were with your **teacher** and you **did not** feel close to him/her at all.

(1) In the space below, please explain what happened at that time:

(2) What was it that did not make you feel close to your teacher?

PART THREE

Questions:

a. Think of a time when you disagreed with your best friend and you did what **YOUR FRIEND** wanted, instead of what you wanted.

(1) Please **describe** the situation

(2) Please rate how you **felt** at that time by circling your answers on the rating scales below.

1	2	3	4	5
I did not feel autonomous at all		I felt somewhat autonomous		I felt very autonomous

1	2	3	4	5
I did not feel close to my friend at all		I felt somewhat close to my friend		I felt very close to my friend

Again, think of a time when you disagreed with your best friend and you did what **YOU** wanted, instead of what your friend wanted.

(1) Please **describe** the situation

(2) Please rate how you **felt** at that time by circling your answers on the rating scales below.

1	2	3	4	5
I did not feel autonomous at all		I felt somewhat autonomous		I felt very autonomous

1	2	3	4	5
I did not feel close to my friend at all		I felt somewhat close to my friend		I felt very close to my friend

b. Think of a time when you disagreed with one of your **parents and you did what **YOUR PARENT** wanted, instead of what you wanted.**

(1) Please **describe** the situation

(2) Please rate how you **felt** at that time by circling your answers on the rating scales below.

1	2	3	4	5
I did not feel autonomous at all		I felt somewhat autonomous		I felt very autonomous

1	2	3	4	5
I did not feel close to my parent at all		I felt somewhat close to my parent		I felt very close to my parent

Again, think of a time when you disagreed with one of your **parent** and you did what **YOU** wanted, instead of what your parent wanted.

(1) Please **describe** the situation

(2) Please rate how you **felt** at that time by circling your answers on the rating scales below.

1	2	3	4	5
I did not feel autonomous at all		I felt somewhat autonomous		I felt very autonomous

1	2	3	4	5
I did not feel close to my parent at all		I felt somewhat close to my parent		I felt very close to my parent

c. Think of a time when you disagreed with your **teacher and you did what **YOUR TEACHER** wanted, instead of what you wanted.**

(1) Please **describe** the situation

(2) Please rate how you **felt** at that time by circling your answers on the rating scales below.

1	2	3	4	5
I did not feel autonomous at all		I felt somewhat autonomous		I felt very autonomous

1	2	3	4	5
I did not feel close to my teacher at all		I felt somewhat close to my teacher		I felt very close to my teacher

Again, think of a time when you disagreed with your **teacher** and you did what **YOU** wanted, instead of what your teacher wanted.

(1) Please **describe** the situation

(2) Please rate how you **felt** at that time by circling your answers on the rating scales below.

1	2	3	4	5
I did not feel autonomous at all		I felt somewhat autonomous		I felt very autonomous

1	2	3	4	5
I did not feel close to my teacher at all		I felt somewhat close to my teacher		I felt very close to my teacher

Thank you very much for answering the questions above! The information you provide would be very helpful for our study. Please write down if you have any more thoughts about those questions and/or your participation.

Appendix C: Autonomy and Relatedness Descriptors Coding Manual

Study 1

Mainland Chinese Adolescents' Concepts of Autonomy and Relatedness

CODING MANUAL

December 2011

PART ONE

Coding “Felt autonomous”

What to code? Across three social contexts of peer, family, and school, responses to questions *“In the space below, please explain what happened at that time”* and *“What was it about that situation that made you feel autonomous?”* are combined and coded according to the coding scheme(categories)outlined below.

Note. In the case of more than one answer to a given question was provided, code only the first one. E.g., “let my friend use my computer and helped him learn how to play a computer game” should be coded as 07.

In addition, potential “new” categories can be created for responses that were relevant but did not fit into the current categories above (in this case, put a note on the specific responses).

01 Stood up for one’s actions

e.g., I confessed to my parents, as I did something wrong

I would defend my action if someone challenged me about why I did it

02 Sense of mastery/Sense of control

e.g., I could be of help to my parents, as they did not receive much education

03 Made a difference/ had an influence on someone or an event

e.g., I discussed class affairs with my teacher

04 Helping

e.g., Helped friends financially

Helped parents do household chores

05 Trying hard to succeed or excel in something

e.g., Tried my best to do well on something

06 Freedom of choice

e.g., My parents often allowed me to choose my favorite food

My mom gave me the permission to buy the books I liked

07 Sharing things

e.g., Shared my stuff (e.g., books) with friends

08 Sharing emotions/opinions

e.g., Shared my joy with friends

I shared my funny stories with my parents

09 Initiative/Leadership

e.g., Played a leading role in organizing activities

Took more responsibilities than friend did on a joint project

10 Got what one wanted/needed /What one proposed or did was accepted

e.g., When I proposed to do shopping, my friends agreed

I got my parents to buy me clothes I liked

11 Independence

e.g., I got things done without my parents' help

12 Acting on others' reasonable expectations

e.g., My parents (teacher) did not place too much pressure on me

13 Other: responses that did not make sense or irrelevant to the questions asked

Coding “*Did not feel autonomous*”

What to code? Across three social contexts of peer, family, and school, responses to questions “*In the space below, please explain what happened at that time*” and “*What was it about that situation that did not make you feel autonomous?*” are combined and coded according to the coding scheme(categories)outlined below.

Note. In the case of more than one answer to a given question was provided, code only the first one.

In addition, potential “new” categories can be created for responses that were relevant but did not fit into the current categories above (in this case, put a note on the specific responses).

14 Did things that one was reluctant to do/Was forced to do something

e.g., I was hesitate to say “no” to friends when I did not want to do something they proposed

My parents forced to do my school work

15 What one proposed or did was not accepted/Did not get what one wanted/needed

e.g., My request to the teacher was rejected

My friend rejected my proposal

16 Did not or was not able to stand up for one's actions

e.g., My friend was punished for my own wrong doings and I didn't do anything

I was not able to justify my action (e.g., forgot to get my assignment done)

17 Being dependent on someone else, especially for support or help

e.g., I needed friend's help when playing games

18 Did not meet others' expectations

e.g., I did not get the marks the teacher expected on me

I was not able to help my parents with household chores

19 Personal rights violated

e.g., My stuff was taken away by friends, without my permission

My parents checked on my messages and phone calls

20 Felt incompetent/ Lacked sense of control

e.g., As I had no clue of the new computer game my friends were talking about, I did not play that game

21 "Other": responses that did not make sense or irrelevant to the questions asked**PART TWO****Coding "Felt close"**

What to code? Across three social contexts of peer, family, and school, responses to questions *"In the space below, please explain what happened at that time"* and *"What was it that made you feel close or connected to your friend(s)/parent(s)/teacher"* are combined and coded according to the coding scheme(categories)outlined below.

Note. In the case of more than one answer to a given question was provided, code only the first one.

In addition, potential "new" categories can be created for responses that were relevant but did not fit into the current categories above (in this case, put a note on the specific responses).

22 Being attuned to each other/Adjusting oneself to someone else

e.g., My friend and I always agreed with each other

My friend and I had similar taste

23 Being attentive to each other's thoughts and feelings/Being thoughtful and considerate to each other

e.g., My mom always knew what I liked most

Sometimes my parents knew what I was thinking, even if without being told

24 Relationship-based: a perceived or actual commitment based on the nature of the interpersonal relationship

e.g., My parents are the most close family to me.

Close friends are committed to helping each other

25 Being caring and warm; or experiencing others' care and warmth

e.g., My friend comforted me when I was in bad mood

My teacher encouraged me when I got poor marks in school

26 Trust

e.g., I trusted my friend

My parents trusted me

27 Showing openness/sensitivity to and respect for the views of others/my views

e.g., When I talked about my opinions on something, my friends listened

Whenever my teacher assigned me some work to do for the class, she considered my opinions

28 Having fun together/Confiding in each other

e.g., My friend and I did handcraft together

Talking to my best friend about what was bothering me made me feel close to her

29 Other": responses that did not make sense or irrelevant to the questions asked

Coding “*Did not feel close*”

What to code? Across three social contexts of peer, family, and school, responses to questions “*In the space below, please explain what happened at that time*” and “*What was it that did not make you feel close or connected to your friend(s)/parent(s)/teacher*” are combined and coded according to the coding scheme(categories)outlined below.

Note. In the case of more than one answer to a given question was provided, code only the first one.

In addition, potential “new” categories can be created for responses that were relevant but did not fit into the current categories above (in this case, put a note on the specific responses).

30 Showing no openness/sensitivity to and respect for the views of others/my views

e.g., My friends did not respect my opinions when we played game together

My teacher neglected what I proposed and stuck with his own ideas

31 Being criticized or criticizing others

e.g., My parents criticized me with the presence of others

My teacher always criticized me

32 No trust

e.g., I did not trust my friend

My parents did not trust me

33 Not being attentive to each other's thoughts and feelings

e.g., Sometimes my parents did not know what I really needed

The birth of my little sister shifted my parents' attention from me

34 Conflicts/disagreements

e.g., My friend and I had an argument

My mom and I disagreed with the color of my new cloth to be bought

35 Not being caring and warm/did not experience others' care and warmth

e.g., My parents cared more about my marks than how I felt

My teacher was cold when I told her that I was sick

36 "Other": responses that did not make sense or irrelevant to the questions asked

Appendix D: Ethics Clearance Form_2

Social Science Research Ethics Board

Certificate of Ethics Clearance for Human Participant Research

DATE: 4/26/2012

PRINCIPAL INVESTIGATOR: ROSE-KRASNOR, Linda - Psychology

FILE: 11-249 - ROSE-KRASNOR

TYPE: Ph. D. STUDENT: Junru Zhao
SUPERVISOR: Linda Rose-Krasnor

TITLE: What Chinese Youth Think about Autonomy and Relatedness

ETHICS CLEARANCE GRANTED

Type of Clearance: NEW

Expiry Date: 4/30/2013

The Brock University Social Sciences Research Ethics Board has reviewed the above named research proposal and considers the procedures, as described by the applicant, to conform to the University's ethical standards and the Tri-Council Policy Statement. Clearance granted from 4/26/2012 to 4/30/2013.

The Tri-Council Policy Statement requires that ongoing research be monitored by, at a minimum, an annual report. Should your project extend beyond the expiry date, you are required to submit a Renewal form before 4/30/2013. Continued clearance is contingent on timely submission of reports.

To comply with the Tri-Council Policy Statement, you must also submit a final report upon completion of your project. All report forms can be found on the Research Ethics web page at <http://www.brocku.ca/research/policies-and-forms/research-forms>.

In addition, throughout your research, you must report promptly to the REB:

- a) Changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
- b) All adverse and/or unanticipated experiences or events that may have real or potential unfavourable implications for participants;
- c) New information that may adversely affect the safety of the participants or the conduct of the study;
- d) Any changes in your source of funding or new funding to a previously unfunded project.

We wish you success with your research.

Approved:

Jan Frijters, Chair
Social Sciences Research Ethics Board

Note: Brock University is accountable for the research carried out in its own jurisdiction or under its auspices and may refuse certain research even though the REB has found it ethically acceptable.

If research participants are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and clearance of those facilities or institutions are obtained and filed with the REB prior to the initiation of research at that site.

Appendix E: Autonomy and Relatedness Scales in Study 2

PART ONE: What do you think about autonomy?

Autonomy is important to everyone as feeling autonomous helps one stay psychologically healthy. Autonomy refers to acting in a way that is true to one's beliefs or values. In other words, autonomy concerns the extent to which people fully accepts, endorses, and/or stands behind their beliefs and actions.

Instructions: Right now we would like you to indicate, following each statement below, how likely you **would** *feel autonomous*.

0 1 2 3 4 5

Don't know very unlikely Maybe very likely

1. I stand up for my actions while interacting with friends
2. I have a sense of mastery/control while interacting with friends
3. I can make a difference or have an influence on an event while interacting with friends
4. I help my friends
5. I try hard to succeed or excel in something while interacting with friends
6. I have freedom of choice while interacting with friends
7. I share things with my friends
8. I share emotions/opinions with my friends
9. I take initiative or am a leader while interacting with friends
10. I get what I want/need while interacting with friends
11. I am independent while interacting with friends
12. I act on my friends' reasonable expectations on me

13. I stand up for my actions while interacting with my parents
14. I can have a sense of mastery/control while interacting with my parents
15. I can make a difference or have an influence on an event while interacting with my parents
16. I help my parents
17. I try hard to succeed or excel in something while interacting with my parents
18. I have freedom of choice while interacting with my parents
19. I share things with my parents
20. I share emotions/opinions with my parents
21. I take an initiative or being a leader while interacting with my parents
22. I get what I want/need while interacting with my parents
23. I am independent while interacting with my parents
24. I act on my parents' reasonable expectations on me

25. I stand up for my actions while interacting with my teacher
26. I can have a sense of mastery/control while interacting with my teacher
27. I can make a difference or have an influence on an event while interacting with my teacher
28. I help my teacher
29. I try hard to succeed or excel in something while interacting with my teacher
30. I have freedom of choice while interacting with my teacher
31. I share things with my teacher
32. I share emotions/opinions with my teacher
33. I take an initiative or being a leader while interacting with my teacher
34. I get what I want/need while interacting with my teacher
35. I am independent while interacting with my teacher
36. I act on my teacher's reasonable expectations on me

In addition, we would like you to indicate, following each statement below, how likely you **would not feel autonomous**.

0 1 2 3 4 5

Don't know very unlikely Maybe very likely

37. I am forced to do something while interacting with friends
38. I couldn't get what I want/need while interacting with friends
39. I did not stand up for my actions while interacting with friends
40. I am dependent on my friends, especially for support or help
41. I did not meet my friends' expectations of me
42. My personal rights are violated while interacting with friends
43. I feel incompetent while interacting with friends
44. I did not help friends
45. I wouldn't accept what my best friend propose
46. I was not able to make my own decisions while interacting with friends

47. I am forced to do something while interacting with my parents
48. I couldn't get what I want/need while interacting with my parents
49. I did not or was not able to stand up for my actions while interacting with my parents
50. I am dependent on my parents, especially for support or help
51. I did not meet my parents' expectations on me
52. My personal rights are violated while interacting with parents
53. I feel incompetent in myself while interacting with parents
54. I did not or was not able to help my parents
55. I would accept what my parents propose
56. I was not able to make my own decisions while interacting with parents

57. I am forced to do something while interacting with my teacher
58. I couldn't get what I want/need while interacting with the teacher
59. I did not or was not able to stand up for my actions while interacting with my teacher

- 60. I am dependent on my teacher, especially for support or help
- 61. I did not meet my teacher's expectations on me
- 62. My personal rights are violated while interacting with my teacher
- 63. I feel incompetent in myself while interacting with my teacher
- 64. I did not or was not able to help my teacher
- 65. I would accept what my teacher proposes
- 66. I was not able to make my own decisions while interacting with my teacher

Now, you can have a 5-minute break

PART TWO: What do you think about relatedness?

Instructions: There are certain ways or situations in which you may feel close to someone. Please indicate, following each statement below, how likely you **would** feel close to people who are important to you.

0 1 2 3 4 5

Don't know

very unlikely

Maybe

very likely

- 67. My friends and I always adjust to each other
- 68. My friends and I are attentive to each other's thoughts and feelings
- 69. My friends are people to whom I feel close
- 70. My friends and I are caring and warm to each other
- 71. My friends and I trust each other
- 72. My friends and I are open to and respect each other's views
- 73. My friends and I always have some fun together
- 74. My friends and I confide in each other

- 75. My parents and I always adjust ourselves to each other
- 76. My parents and I are attentive to each other's thoughts and feelings
- 77. My parents are people to whom I should feel close
- 78. My parents and I are caring and warm to each other
- 79. My parents and I trust each other
- 80. My parents and I are open to and respect for each other's views
- 81. My parents and I always have some fun together
- 82. My parents and I confide in each other

- 83. My teacher and I always adjust ourselves to each other
- 84. My teacher and I are attentive to each other's thoughts and feelings
- 85. My teacher is someone to whom I should feel close

- 86. My teacher and I are caring and warm to each other
- 87. My teacher and I trust each other
- 88. My teacher and I are open to and respect for each other's views
- 89. My teacher and I always have some fun together
- 90. My teacher and I confide in each other

We would **also** like you to indicate, following each statement below, how likely you **would not** feel close to people who are important to you.

0 1 2 3 4 5

Don't know very unlikely Maybe very likely

- 91. My friends and I are not open to and respect for each other's views
- 92. My friends criticize me a lot
- 93. My friends and I do not trust each other
- 94. My friends and I are not caring and warm to each other
- 95. My friends and I are not attentive to each other's thoughts and feelings
- 96. My friends and I have conflicts or disagreements
- 97. Sometimes, I was socially excluded by friends
- 98. Self-assertion is valued by both my friends and myself
- 99. My friends keep some secret from me

- 100. My parents and I are not open to and respect for each other's views
- 101. My parents criticize me a lot
- 102. My parents and I do not trust each other
- 103. My parents and I are not caring and warm to each other
- 104. My parents and I are not attentive to each other's thoughts and feelings
- 105. My parents and I have conflicts or disagreements
- 106. Sometimes, I was socially excluded by parents
- 107. Self-assertion is valued by both my parents and myself
- 108. My parents keep some secret from me

- 109. My teacher and I are not open to and respect for each other's views
- 110. My teacher criticizes me a lot
- 111. My teacher and I do not trust each other
- 112. My teacher and I are not caring and warm to each other
- 113. My teacher and I are not attentive to each other's thoughts and feelings
- 114. My teacher and I have conflicts or disagreements
- 115. Sometimes, I was socially excluded by the teacher
- 116. Self-assertion is valued by both my teacher and myself
- 117. My teacher keeps some secret from me

Appendix F:

Social-Oriented and Individual-Oriented Achievement Motivation Scale (Yu & Yang, 1989)

Social-Oriented Achievement Motivation

1. I always try hard to do what my parents expect me to do, as I don't want to disappoint them.
2. The reason why I work so hard is that only doing well in school can bring me a bright future.
3. I work very hard on my school work in that teachers usually praise hard workers.
4. I always think about this way: are my parents satisfied with my performance?
5. I always try harder and harder to achieve what my parents expect on me.
6. The primary goal of my life is to do things that make my parents be proud of me
7. I always think about what the teacher requires while doing school work.
8. To get high marks, I always follow the teacher's instructions.
9. I should feel sorry to my ancestors if I were not standout.
10. Whether I am doing a good job or not, normally is decided by my parents or the teacher.
11. Before starting anything, I always think about if the goal I have set for myself is consistent with that of my parents.
12. I always set my goals in a way adhere to what my parents wish.
13. I often do my work, with reference to how well my classmates or friends are doing.
14. I would worry about being laid behind if I found my classmates work harder than I do.
15. To make myself impressive, I normally do my best on the work my teacher assigns.
16. Whenever the teacher praises other students in the class, I realize that I should have worked harder.
17. Before starting to work, I always hope I can get detailed instructions from others.
18. The driving force behind my hard work is what my teacher expects or requires me to do.
19. I want to know how other people evaluate me on my academic performance.
20. I like being evaluated by others whether I am doing a good work or not.
21. I try hard to get things people usually value.
22. I try my best on any piece of work at hand to make people believe that I can do a good job.
23. I don't care if I am really interested in learning, but I do care about my grades.
24. I admire those who are high on the social ladder.
25. I usually try hard to do things that my parents consider meaningful.
26. I would feel ashamed if I do poorly in school.
27. The reason why I work so hard is to show people around that I am an ambitious person.
28. I wouldn't feel proud of myself when I have done an excellent job, if nobody else knows.
29. Without encouragement from other people, I can easily give up what I am doing.
30. I hope I can become an authority figure in a profession.

Individual-Oriented Achievement Motivation

1. I will try my best to do things that I value, no matter how difficult it might be.
2. I try hard to be perfect when I am working.
3. I won't give up what I am doing, even without other people watching.
4. I always think about this way: am I approaching the goals that I have set for myself?

5. I always try different ways to resolve the problems in work, based on my own judgments.
6. I like working just because work itself makes my life meaningful.
7. When getting something done, I like evaluate my work based on my own criteria.
8. I always place high expectations on myself in work.
9. The goals and values of my life are determined by myself.
10. The reason why I like learning is that learning makes myself a knowledgeable person.
11. I work hard with all my heart to achieve my success.
12. When I get low marks, I will try to find out what I did wrong and figure out better learning strategies.
13. I would feel proud of myself when I have done a perfect job, even if nobody else knows.
14. I will try my best to do something meaningful from my own perspective, no matter how others might think about me.
15. The most exciting thing is having done an excellent job, but not the pay.
16. What makes me happy most is that I am approaching my own goals in school work.
17. When having got something done, I am usually very clear about the criteria against which my work is to be evaluated.
18. I usually make my own choices and do things I really enjoy.
19. Pursuing higher education degree is not to bring honour to my ancestors, but because I am really interested in learning.
20. I will feel sorry for myself if I couldn't reach my own goals.
21. The expectations I placed on myself with respect to my work, are usually higher than what others expect me to do.
22. I enjoy most is leaning itself, but not the grades.
23. In order to do better in school, I usually use my own learning strategies.
24. Working itself is enjoyable and I am willing to do anything interesting.
25. I always stay up till late to finish up the work I enjoy.
26. I know very well about how hard I should be working to achieve my goals.
27. I can always sense whether or not I did well on some work, right after I have got it done.
28. How well one is achieving should be judged by himself/herself.
29. I try hard on something, just to convince myself that I am capable of and happy about the work I do.
30. I will feel sorry for myself if I got low marks in school, even if my parents wouldn't blame on me.

Appendix G: Final Sets of Autonomy and Relatedness Items

Categorization of Autonomy Scale Items

Peer context

I stand up for my actions while interacting with friends (**U**)
 I share emotions/opinions with friends (**U**)
 I am independent while interacting with friends (**P**)
 I try hard to succeed or excel in something while interacting with friends (**P**)
 I have freedom of choice while interacting with friends (**P**)
 I share my things with friends while interacting with friends (**S**)
 I act on my friends' reasonable expectations on me (**S**)

Family context

I stand up for my actions while interacting with my parents (**U**)
 I share emotions/opinions with my parents (**U**)
 I am independent while interacting with my parents (**P**)
 I try hard to succeed or excel in something while interacting with my parents (**P**)
 I have freedom of choice while interacting with my parents (**P**)
 I share my things with my parents (**S**)
 I act on my parents' reasonable expectations on me (**S**)

School context

I stand up for my actions while interacting with my teacher (**U**)
 I share emotions/opinions with my teacher (**U**)
 I am independent while interacting with my teacher (**P**)
 I try hard to succeed or excel in something while interacting with my teacher (**P**)
 I have freedom of choice while interacting with my teacher (**P**)
 I share my things with my teacher (**S**)
 I act on my teacher's reasonable expectations on me (**S**)

Note.

U = universal autonomy

P = personal autonomy

S = social autonomy

Universal autonomy: the extent to which individuals fully accept, endorse, and/or stand behind their beliefs and actions, with a sense of agency.

Personal autonomy: volitional actions on behalf of the individuals' own interests, goals, and/or motivations

Social autonomy: volitional actions that emerge out of interests, requirements, and/or expectations of those who are in individuals' social systems (e.g., significant others).

Categorization of Relatedness Scale Items

Peer context

My friends and I are caring and warm to each other (**U**)
 My friends and I always have some fun together (**U**)
 My friends are those to whom I should feel close (**U**)
 My friends and I always adjust ourselves to each other (**A**)
 My friends and I are attentive to each other's thoughts and feelings (**A**)
 My friends and I trust each other (**D**)
 My friends and I are open to and respect for each other's views (**D**)

Family context

My parents and I are caring and warm to each other (**U**)
 My parents and I always have some fun together (**U**)
 My parents are those to whom I should feel close (**U**)
 My parents and I always adjust ourselves to each other (**A**)
 My parents and I are attentive to each other's thoughts and feelings (**A**)
 My parents and I trust each other (**D**)
 My parents and I are open to and respect for each other's views (**D**)

School context

My teacher and I are caring and warm to each other (**U**)
 My teacher and I always have some fun together (**U**)
 My teacher is the one to whom I should feel close (**U**)
 My teacher and I always adjust ourselves to each other (**A**)
 My teacher and I are attentive to each other's thoughts and feelings (**A**)
 My teacher and I trust each other (**D**)
 My teacher and I are open to and respect for each other's views (**D**)

Note.

U = universal relatedness

A = accommodation

D= distinctiveness

Universal relatedness: felt connectedness/closeness to others

Accommodation: valuing similarity between self and others, involving processes such as avoidance of interpersonal conflicts.

Distinctiveness: appreciating and valuing self-other differentiation through processes such as openness/sensitivity to and respect for each other's views.